

Summary
Supplemental Work Plan – Final Environmental Impact Statement
For the
LOST RIVER SUBWATERSHED
of the
POTOMAC RIVER WATERSHED
Hardy County, West Virginia
West Virginia Second Congressional District

Sponsors: Potomac Valley Conservation District
Hardy County Commission
West Virginia State Conservation Committee

Proposed Action: Construction of Site 16 on Lower Cove Run and deletion of Site 23 on Cullers Run in the Lost River Watershed

Purpose and Need for Action:

- Project purposes: flood control, rural raw water supply, and watershed protection
- Watershed problems consist of flooding, loss of agricultural productivity, erosion and sediment damage, degraded water quality, threats to human health and safety as a result of flooding, impaired land use, and lack of dependable raw water supplies. Opportunities exist to reduce flooding, reduce erosion and sedimentation, improve human health and safety, ensure adequate and dependable raw water supplies, and enhance agricultural productivity as a result of the Lost River Subwatershed Project.

Description of the Recommended Alternative:

The recommended alternative is to construct Site 16 as a multiple-purpose flood control and water supply structure and delete Site 23 from the Work Plan.

Resource Information:

- 38°55'28" degrees North latitude and 78°49'41" degrees West longitude
- Hydrologic Unit Number 02070003
- Moderate Climate with few summer and winter extremes
- Watershed Size - 117,200 acres
- Land Uses: 8% cropland, 16% grassland, 73% forestland, 3% miscellaneous
- Floodplain Land Use downstream of Site 16 (acres): 245 forestland, 75 miscellaneous, 396 grassland, 872 cropland
- Land Ownership: 75% private; 3% state-local; 22% federal
- Watershed Demographics
 - Hardy County Population (2000 Census) 12,669
 - Lost River Watershed Population (estimated) 2,600
 - 100% Rural Households, 99% White
 - Hardy County Per Capita Income \$19,449; National Per Capita Income \$29,469
 - Hardy County Unemployment Rate 2.7%; National Rate 4.8%
 - Hardy County Poverty Rate 13.1%; National Rate 12.4%
 - Median House Value (2000 Census) \$74,700

- Median Household Income (2000 Census) \$33,778
- Median age of population (2000 Census) 38.9
- Farm Information
 - Number of Farms in Hardy County 468
 - Average Farm Size 274 acres
 - Market Value of Agricultural Products Sold (average per farm) \$264,161
- Archeological Sites Investigated as a result of project
Phase I – 42 sites; Phase II – 25 sites; Phase III – 2 sites
- Resource Concerns Relevant to Scoping: flood damages, erosion and sedimentation, agricultural productivity, water supply, recreation, water quality, endangered & threatened species, environmental justice, fish & wildlife coordination, cultural resources, invasive species, NED account, prime & unique farmland, public health & safety, riparian areas, waters of the US, wetlands
- Alternative Plans Considered and Components of each Plan
 - No Action Future Without Project Alternative
 - Alternative 1 – 3 as-built sites, land treatment, construction of multiple-purpose Site 16 for flood control and water supply, and deletion of Site 23
- No more than 9.6 acres of potential wetlands impacted by proposed Site 16 Project
- Mitigation Measures will be determined during the 404 permitting process. Estimated cost for anticipated mitigation measures is included in Site 16 construction costs

Project Costs – Alternative 1 (3 as-built sites, land treatment, construction of Site 16, deletion of Site 23):

Construction	PL 534 Funds		Other Funds		Total	
	Dollars	Percent	Dollars	Percent	Dollars	Percent
Construction	37,274,600	93%	2,776,400	7%	40,051,000	100
Engineering	2,948,600	95%	145,500	5%	3,094,100	100
Relocation	334,500	82%	71,000	18%	405,500	100
Real Property Rights	4,600,200	49%	4,727,700	51%	9,327,900	100
Administration	831,600	85%	146,600	15%	978,200	100

Annual Project Benefits (Alternative 1): flood damage reduction benefits \$584,500; water quality improvement \$278,700; incidental recreation \$872,900; water supply \$1,118,900; other benefits as indicated in Tables 5 and 6

Net Annual Beneficial Effects (Alternative 1): \$393,600

Benefit Cost Ratio of Alternative 1, Supplement #4: 1.13

Period of Analysis: 100 years @ 5 1/8% project discount rate

Project Life: 100 years

Alternative 1 Benefit/Cost Ratio @ 1974 authorized project discount rate of 5 1/2%: 1.05

Environmental Impacts (Alternative 1): Potential environmental impacts include up to 9.6 acres of potential wetlands, 197 acres of prime and important farmland, 2,785 feet of linear feet perennial cold water stream, 5,570 linear feet of riparian habitat, and 220.7 acres of private land converted to public use. Environmental impacts to wetlands and wildlife habitat will be fully mitigated during the 404 permitting process.

Major Conclusions: Alternative 1, which includes construction of multiple-purpose Site 16 and deletion of Site 23, is the Recommended Alternative.

Areas of Controversy: Opposition by affected landowners at Site 16

Issues to be Resolved: The following items will be completed at such time as project personnel may have access to property affected by the implementation of the proposed Lost River Site 16 project:

1. Complete the wetland delineation and determine the extent of wetland impacts that may result from project implementation;
2. Complete the analyses of terrestrial habitat units using PAM-HEP procedures and determine the changes in wildlife habitat units before and after project implementation;
3. Complete the analyses of fishery habitat units using PAM-HEP procedures and aquatic habitat rating scores using Rapid Bioassessment Protocols and determine the changes in habitat before and after project implementation; and
4. Complete the Phase II Cultural Resources investigations at the four sites indicated in the FEIS Cultural Resources section conduct a Phase I survey on the realigned auxiliary spillway area not previously surveyed.

Items 1 through 3 will be conducted in consultation with the WVDNR and USFWS. Information collected will be used to finalize mitigation strategies for wetlands and wildlife habitat as discussed in the Mitigation Summary section of this FEIS. Wetland delineations will be subject to jurisdictional determination requirements as may be required by the U.S. Army Corps of Engineers.

The Phase I Cultural Resources survey will be completed and the results submitted to the WV SHPO for review and concurrence. The four Phase II sites, and any additional ones that may be identified at the realigned spillway area, will be surveyed prior to the completion of the final design preparation for the project.

Lost River Subwatershed Agreement Supplement #4

See pages i-vii in next link

**Supplemental Work Plan No. 4
and
Final Environmental Impact Statement
for the
Lost River Subwatershed
of the
Potomac River Watershed
Hardy County, West Virginia**

INTRODUCTION

The Lost River Subwatershed Work Plan, for watershed protection and flood control, was approved for operations on February 11, 1975, under the authority of the Flood Control Act, Public Law 78-534. Sponsors of the project are Hardy County Commission, Potomac Valley Conservation District, and the West Virginia State Conservation Committee.

The Work Plan, prepared in October 1974, includes provisions for land treatment measures covering 94,750 acres, four single-purpose flood control dams, and one multiple-purpose flood control/recreation dam. A Final Environmental Impact Statement (FEIS) was issued in October 1974, covering the work to be installed as described above. For a description of project elements, alternatives, environmental resources, and projected impacts, the 1974 FEIS should be consulted. This document is available from the NRCS at the following address:

USDA – Natural Resources Conservation Service
75 High Street, Room 301
Morgantown, West Virginia 26505

The 1974 Work Plan has been supplemented three times to add sponsors, change the land treatment program, and add rural water supply to one structure. Currently, land treatment measures have been applied on 95,708 acres and three of the five originally planned dams; Site

4, Site 27, and Site 10; are complete. The primary purposes of this Supplement are to compile and evaluate economic and environmental data necessary for compliance under the National Environmental Policy Act, Clean Water Act, and other pertinent authorities and statutes; evaluate the impacts of deleting the recreational component at Site 16, evaluate the impacts of adding water supply to Site 16, evaluate the impacts of deleting Site 23, and reaffirm project feasibility.

NEED FOR SUPPLEMENT

The 1974 Work Plan – FEIS and subsequent supplements contain a discussion of aspects of the watershed project, such as description of the watershed and watershed problems, that are not explicitly discussed in this report. These documents should be consulted for opportunities, goals, needs, and resource problems pertinent to the Lost River Watershed. This supplement reaffirms the occurrence of damaging floods in the watershed and the continued need for flood control measures. Damaging floods have occurred in the watershed, on average, every 10 years. The floods of 1936, 1942, 1949, 1954, 1970, 1976, 1979 (loss of life on Bakers Run), 1985, 1996, and 2003 caused damage in the watershed. Approximately 1,900 acres of the watershed are floodplain, excluding the stream channel, extending from the headwaters of the watershed above Mathias to Wardensville and downstream to the contiguous Upper Cacapon River floodplain. Refer to the floodplain maps in Appendix B for more information. Damageable properties include homes, roads, bridges, commercial properties, farm buildings, fencing, crops, pastureland, livestock, agricultural improvements, and public utilities. As part of this supplemental update, land use patterns in the floodplain and the type and number of damageable properties were verified and updated to reflect current conditions. Refer to the “Investigation and Analysis” section in Appendix C for more information on flood damage determinations.

There is a need to supplement the Lost River Subwatershed Work Plan – 1974 FEIS due to changes in project purpose and scope.

Statement of Need

There is a need to supplement the 1974 Work Plan, as previously supplemented, due to the sponsors' request to change the purpose of Site 16. There is also a need to update the environmental impact statement, reassess project feasibility, and document changing conditions in the watershed.

Change in Purpose for Site 16:

Lost River Site 16, located in eastern Hardy County near the community of Lost City, was originally planned as a multiple-purpose recreation and flood control impoundment. However, since the original Work Plan for Lost River was written in 1974, additional recreation facilities have been developed nearby at Lost River State Park, Trout Pond, Rock Cliff Lake, and Warden Lake. With the exception of meeting the demand for fishing, these facilities increased opportunities for outdoor recreation for the area and duplicated much of the facilities development that was planned at Site 16. As a result, the Sponsors requested the deletion of developed recreation as a project purpose at Site 16.

However, just as changing conditions in the watershed caused the Sponsors to request the elimination of the developed recreational component, another critical need has been identified. During the re-evaluation of Site 16, the importance of water supply for Hardy County has been emphasized by the local sponsors. In 2004, the Hardy County Water Resources Study identified the need for additional water supplies in eastern Hardy County. In light of rapid development

trends in housing and highway construction, Sponsors refined their projected water needs. Residential and commercial water supply needs were projected through Year 2060. Trends in housing growth, population growth, and highway development were used to predict the future water demand in the Lost River Valley and surrounding areas. Projections indicate that the water supply in Lost River Site 10 will meet about 75% of the estimated Year 2020 demand during the most critical drought periods. Sponsors recognize an immediate need to seek additional water supply sources. Additional water is needed from other sources to fully meet the projected 2020 need and to partially meet the needs through Year 2060. Appendix E contains the Sponsors' Water Supply Needs document. Therefore, the Sponsors requested that water supply be evaluated as a potential added purpose to Site 16. Letters from the local sponsors are included in this Supplemental Work Plan – FEIS that identify and further define the need for water supply.

Infrastructure development such as water supply is necessary to meet the needs of a growing population in eastern Hardy County. Public Law 78-534 allows for the addition of water supply in structures, provided there is justification for such a measure. In the case of Site 16, it is proposed that 400 acre-feet of the permanent pool be converted from a recreational pool to a water supply pool. This storage will help meet the water supply needs of a rapidly developing county. Water is essential for development at the Baker Industrial Park and the industrial park proposed for the Wardensville area. Additional fire protection is needed for all of eastern Hardy County. Construction of the Appalachian Corridor H highway, a new four lane route that traverses the watershed, is already spawning development and the need for plentiful, dependable water. Based on the Sponsors' request, this supplement evaluates the potential to add water supply as a purpose to Site 16.

Evaluation of Site 23:

The viability of Site 23, one of the two remaining structures planned as part of the original project, was assessed as part of this report. Site 23 is a single-purpose flood control structure located on Cullers Run 2.5 miles upstream of the confluence with Lost River. Additional engineering and geologic evaluations done in 1999 were reviewed for this report. Results of the geologic investigation did not show adequate on-site material for the construction of the impervious core of an earth embankment. Off-site borrow material or alternative construction methods, such as roller-compacted concrete, were considered. Any of these methods would increase the cost of the site from the original planning cost (indexed to 2006 dollars) from \$4,414,200 to approximately \$32,000,000. Based on these engineering and geological concerns, the Sponsors have elected to delete Site 23 from this project. The elimination of Site 23 has no bearing on the effectiveness of Site 16.

SCOPE OF ENVIRONMENTAL IMPACT STATEMENT

This section documents the range of issues and impacts considered in developing this report. Tabulation 1 outlines the concerns identified during the project scoping. The degree of concern and relevance to the proposed action were determined through interagency consultation and through public participation during the development of this supplement.

**TABULATION 1
SUMMARY OF SCOPING
LOST RIVER SUBWATERSHED**

Resource Concern	Relevant to the Proposed Action?		Rationale
	Yes	No	
Sponsors, Public, Agencies			
Flood Damages	X		\$1,202,500 in annual flood damages
Soil Erosion and Sedimentation	X		\$58,800 in annual sediment & erosion damages
Agricultural Productivity	X		Area of high agricultural productivity
Water Supply	X		Identified as critical need by Sponsors
Recreation	X		Duplicate recreational resources identified; changed purpose as a result
Water Quality	X		Lost River TMDL
NRCS Requirements			
Air Quality		X	Project not in air quality attainment area
Ecologically Critical Areas		X	None present in area of project impact
Endangered and Threatened Species	X		No federally listed species expected to be impacted; (USFWS letter dated August 15, 2005 on file)
Environmental Justice	X		Public workshop encouraged all interested persons to participate in process.
Essential Fish Habitat		X	Lower Cove Run not designated essential fish habitat
Aquatic Resources	X		Convert 2,785 linear feet (1.32 acres) of cold water perennial stream to 46.6 acre warm water lake
Land Use and Upland Habitat	X		Convert 86.6 acres of woodland, hayland and pasture to 46.6 acre lake, dam and spillway
Floodplain Management		X	County zoning ordinance in effect; county participates in floodplain management program
Historic, Scientific, and Cultural Resources	X		Phase I archeology completed; Phase II testing to be conducted in future, determine if Phase III is needed.
Invasive Species	X		Disturbed areas will be revegetated quickly to discourage spread of invasive plants
Migratory Birds		X	No adverse effect on migratory birds
National Economic Development Account	X		Required by the Water Resource Council Principles & Guidelines
Natural Areas		X	No effect on designated natural areas
Parklands		X	None present in area of project impact
Prime & Unique Farmland	X		197.7 acres of prime and important farmland to be removed from agricultural production
Public Health & Safety	X		Potential for loss of life due to flooding
Regional Water Resource Plans/Coastal Zone Management Areas		X	Project is not in a regional water resource planning area or a coastal zone management area
Riparian Areas	X		5,570 linear feet of riparian habitat to be converted to lake, dam and spillway
Scenic Beauty		X	Scenic attributes of watershed not appreciably effected
Waters of the US	X		2,785 linear feet of perennial stream to be converted to dam, spillway and 46.6 acre lake
Wetlands	X		Up to 9.6 acres of potential wetlands may be impacted by the project
Wild & Scenic Rivers		X	Wild & Scenic River Status does not apply

AFFECTED ENVIRONMENT

Population and housing growth, recreational amenities, and highway construction have increased the need for dependable water supplies in the watershed. There has also been growth in the agricultural poultry industry in the Lost River Valley. Other watershed conditions remain similar as described in the 1974 Work Plan – FEIS. The Lost River area has experienced an above average increase in population and housing growth over the past three to four decades. This increase corresponds to infrastructure improvements such as recreation amenities and highway construction. Such increases are associated with the continuous westward expansion and urban sprawl of the Washington, DC-Baltimore metropolis. Rural areas such as the Lost River Valley are experiencing second home growth and development pressure, spurred in part, by the construction of the Appalachian Corridor H Highway. These improvements in infrastructure and increases in population have increased the need for a more dependable water supply than what has been relied on in the past. A dependable and sustainable water supply is necessary to support this growth. Thus, water supply is being proposed as a project purpose to Site 16 at the request of Project Sponsors. Since the completion of the 1974 Work Plan – FEIS, several recreational amenities have been added to the Lost River area, reducing the desire to include similar developed facilities at Site 16. As a result, the developed recreation project purpose is no longer requested by Sponsors.

Environmental impacts at the proposed Site 16 location include no more than 9.6 acres of potential wetlands impacted, 197 acres of prime and important farmland, 2,785 linear feet of perennial cold water stream, 5,570 linear feet of riparian habitat, and 220.7 acres of private land

converted to public uses. Four prehistoric sites will require Phase II archeological investigations due to construction impact.

ALTERNATIVES CONSIDERED

Alternative Analysis for Flood Control:

An extensive alternatives analysis was done during the planning phase of the 1974 Lost River Subwatershed project. The 1974 Work Plan - FEIS contains a detailed description of the alternatives studied during formulation of the Lost River project as well as their expected impacts. These alternative measures include land treatment, flood proofing, flood insurance, floodplain purchase, stream channel modification, diking, impoundments, and various combinations thereof. Also considered was the “no project” alternative. An evaluation of alternatives to address flooding and water supply was conducted as part of Supplement #3 in March 2001 and again in this supplement with regard to their applicability and effectiveness given current watershed conditions. Additional alternatives such as stream bank restoration, riparian plantings, wetland restoration, restoration and preservation of floodplain areas, storm water and agricultural runoff management, dry dams, and property relocations were addressed based on comments received on this Supplement – DEIS.

Land Treatment Alone

Extensive land treatment has been applied as a component of the authorized Lost River Watershed project and has resulted in a reduction in sediment and erosion in the watershed. It has also improved agricultural productivity, improved soil moisture conditions, and prevented excessive loss of topsoil. However, as was the case in 1974, land treatment best management practices are ineffective in reducing flooding sufficiently to prevent damages during significant

rainfall events in the Lost River watershed. Although land treatment practices meet the Sponsors' needs for improved conservation of the watershed resources, they alone do not meet the Sponsors' needs for flood control and water supply.

Floodproofing and Flood Insurance

As detailed in the 1974 Work Plan – FEIS and confirmed by re-evaluation during this planning effort, a combination of floodproofing and flood insurance is relatively ineffective in reducing flood damages to roads, bridges, most agricultural outbuildings, livestock, crops and fencing. These types of properties are not eligible for flood insurance and therefore, would not be covered under this alternative. Floodproofing typically involves elevating homes and businesses or building individual flood walls around damageable property. Such measures are not practical or cost-effective for farmland, roads, bridges, farm buildings, fences, and livestock. This alternative would be voluntary, reducing the likelihood that maximum benefits would be realized. Furthermore, this alternative does not meet the Sponsors' need for water supply.

Stream Channel Modification and Diking

Stream channel modification, diking, riprap, and bridge modifications were evaluated in 1974 as an alternative to reduce flooding. For the reasons cited in the 1974 Work Plan, including degraded habitat in about 15 miles of Lost River and increased peak flows and flood damages downstream, this alternative is no more applicable or feasible now than it was in 1974. This alternative does not provide sufficient flood protection to justify the costs and environmental impacts associated with this option. Flood damages to farming operations in the Lost River floodplains would still occur when flooding exceeds channel capacity, which is usually a 2-year

frequency discharge (<http://www.epa.gov/warsss/sedsource/bankfull.htm>). This alternative is ineffective in reducing damages and is too environmentally damaging to implement. Also, it does not meet the Sponsors' current need for water supply.

System of Upstream Impoundments

As many as 30 upstream impoundments were evaluated in different combinations and with other alternative measures as a means of providing a high level of flood damage reduction. Detailed analysis was conducted in 1974 to determine the most effective combination of structures. As part of this supplemental evaluation, engineering, geology, and hydrology factors were re-considered to determine whether the Recommended Plan was still the most viable solution. As discussed in the "Need for Supplement" section of this FEIS, Site 23 was deleted from the Recommended Plan due to engineering and geology considerations. No new structures were identified as viable components of the Recommended Plan. The combination of Sites 4, 10, 16, and 27 is the best option for meeting the Sponsors' objectives for flood control and water supply.

Floodplain Purchases and Relocation

Floodplain purchasing would require government acquisition of all the flood prone structures and farmland in the Lost River Valley. Acreage in the floodplain is approximately 1,900 acres. In order for this alternative to be effective at reducing damages, there would have to be 100 percent voluntary participation or the possible use of eminent domain on a large number of properties. Floodplain land would be returned to natural conditions and removed from farmland production. Roads and bridges would be ineligible and would continue to incur damages. The cost of implementing this alternative exceeds the benefits and would negatively impact the future tax

base of the area. All farmland and income from such operations would be removed from the local economy(tax base). Relocation of agricultural operations to other prime flood-free agricultural land equivalent to the Lost River floodplain would be impossible in West Virginia. The social impacts of a non-voluntary floodplain purchase and relocation alternative exceed those of the other alternatives. Furthermore, this alternative does not meet the sponsors' current needs for water supply.

Stream Bank Restoration

Stream bank restoration is a process that restores the vegetation, cross sectional area and/or the slope of an altered stream bank to more stable conditions. This is done to address excessive stream bank erosion, enhance aquatic habitat, improve riparian corridors and improve water quality. The flow capacity of a natural stream channel is generally a 2-year frequency discharge (<http://www.epa.gov/warsss/sedsource/bankfull.htm>). The vegetation along the stream bank creates resistance to flow, which results in lower water velocities, less soil erosion and potentially higher water surface elevations. This alternative does not meet the Sponsors' current need for flood control or water supply.

Riparian Planting

Riparian planting is a process that restores woody vegetation on an unstable stream bank to create more natural conditions. This is done to address stream bank erosion, enhance aquatic habitat, improve riparian corridors and improve water quality. The flow capacity of a natural stream channel is generally a 2-year frequency discharge. The vegetation along the stream bank creates resistance to flow, which results in lower water velocities, less soil erosion and

potentially higher water surface elevations. This alternative does not meet the Sponsors' current need for flood control or water supply.

Wetland Restoration

Wetland restoration is the rehabilitation of previously existing wetland functions, from a more impaired to a less impaired or unimpaired state of overall function. Wetlands are capable of improving water quality and reducing peak runoff, providing they are located upstream of damage areas and comprise a considerable portion of the drainage area in order to have an appreciable effect. Based on values presented in the EPA publication (<http://www.epa.gov/owow/wetlands/pdf/Flooding.pdf>), a minimum of 844 acres of wetlands would be required to replace the 2,531 acre-feet of 100-year frequency flood storage that Site 16 is expected to provide. This alternative does not meet the Sponsors' current need for flood control or water supply.

Storm Water and Agriculture Runoff Management

Storm water management is used to address impervious surfaces such as roofs, roads, driveways, streets and parking lots that prevent storm water runoff from naturally soaking into the ground. It is usually applied in developing areas in order to keep post development volume and peak rate of storm water discharges at the predevelopment values. The runoff control measures are typically designed for storms between 1-year and 25-year frequencies and do not provide flood protection for larger storms.

Agriculture runoff management can be used by farmers to reduce erosion, sedimentation, and chemical transport by applying management measures to fields and pastures. The volume and peak rate of storm water discharges are reduced by measures such as stream bank restoration, riparian buffer establishment, stream bank fencing, and conservation tillage. These actions are primarily used to address water quality. This alternative does not meet the Sponsors' current need for flood control or water supply.

Dry Dams

A dry dam is a dam constructed for the purpose of flood control. Dry dams are designed to allow the stream to flow freely during normal conditions. Dry dams do not maintain a permanent pool of water. During periods of intense rainfall, the dam holds back the excess floodwater and releases it downstream at a controlled rate.

A dry dam does not differ significantly from a dam with a permanent pool. Even though the design storages upstream of the dams could be different, the components would essentially be the same. The primary difference between the two types of dams would be in the operation of the intake riser. The dry dam intake riser would have the lower gate normally open, while the dam with a permanent pool would have the intake riser lower gate normally closed.

Construction costs are reasonably the same for dry dams and conventional dams. Because the dry dam does not contain water supply storage, this alternative does not meet the Sponsors' current need for water supply.

Alternative Analysis for Water Supply:

Several water supply alternatives were considered. Ground water and surface water sources were evaluated to determine their potential to meet the future water supply needs of the Lost River Subwatershed.

Groundwater

Two types of ground water sources, wells and springs, are heavily used to meet the present water demands in the area. Currently, wells and springs provide water to all the residents and businesses in eastern Hardy County. Springs are common in Hardy County and are utilized as a water supply source for several localities. Wells are the sole source of water for the approximately 430 poultry house operations in the county, representing an intensive existing demand on the ground water resources.

These ground water sources have restricted yields, particularly for any large scale industrial, commercial, or residential development. They are also subject to poor rates of recharge during periods of drought, as experienced most recently during the drought of 1999. As indicated in the Hardy County Water Resources Report, springs and wells do not have the potential to provide water in sufficient amounts to meet the long-term needs of eastern Hardy County. These sources are especially vulnerable during drought conditions. During the 1999 drought, farmers used the Site 4 impoundment for emergency raw water supplies. Through the Emergency Conservation Program, producers drilled some new wells and acquired truck-mounted water tanks to haul water from the impoundment to their operations. This drought event, and the impact it had on the local economy, reinforced the need to consider water supply in any future watershed projects.

Rivers and Streams

Surface waters were also evaluated as to their potential to meet water supply needs. Surface waters are subject to the same drought conditions as wells and springs, making streams and rivers susceptible to extreme low flow and no flow at times. Historical gage flow data (United States Geological Survey river gage at McCauley) show that the Lost River Subwatershed is at base flow during many of the late summer/early fall seasons. Base flow condition exists when the streams are totally recharged by groundwater. Under these conditions, placing an intake in Lost River for removal of any additional water from the stream system would be detrimental to the aquatic ecosystem. There are no water supply systems dependent on stream intakes in the Lost River Subwatershed due to the unreliable nature of this supply source.

Water Purchase Agreements

Water purchase agreements were considered as another option to meet the water supply needs of the area. A water purchase agreement is an arrangement in which one community enters into an agreement to purchase water from another nearby municipality. The existing municipal water supply systems in Hardy County serve approximately 39% of the county population, with the Hardy County Public Service District, Moorefield and Wardensville having the largest service areas. The largest potential customer base for expanded public water is in the Baker area.

Wardensville is the nearest municipal water system, but constraints such as a reliable water supply prevent that source from being considered as a reasonable alternative. Moorefield is nearly 22 miles to the west, in the South Branch River Subwatershed, and is too geographically

distant to be practical. Therefore, water purchase agreements are not considered the most reasonable alternative.

Water Conservation

In some situations, water conservation measures are a reasonable means of increasing the efficiency of an available water supply. Water conservation measures include reduction of excessive unaccounted for water (i.e., water lost in water systems due to leakage and unmetered use), and use of more efficient appliances and water conservation devices (e.g., low-flow toilets and showerheads, etc.). These measures typically apply to communities which are being serviced by older systems that are in need of upgrading. Because there are no existing systems in the Lost River Subwatershed, there are no options to implement systematic conservation measures. In reality, many rural households already practice water conservation because of the limited yield of their individual springs or wells. Thus, water conservation measures are not a reasonable option for meeting the future water supply needs of eastern Hardy County.

Impoundments

There are nine existing impoundments in Hardy County that provide flood control, recreation, and/or water supply benefits. Three of these are located in the Lost River Watershed – Site 27, Site 4 and Site 10. Site 10 is the only impoundment that is designed for flood control and water supply. The potential for Site 10 to meet all the needs of the Lost River Watershed was evaluated as one alternative. The other two sites, Site 27 and Site 4, were also evaluated as to their potential for expansion to include permanent water supply storage.

Site 10 was considered as an alternative to meet all the needs of the entire Lost River Watershed. As per Supplement #3 to the 1974 Lost River Subwatershed Work Plan – FEIS, Site 10 was modified to include 400 acre-feet of dedicated water supply. Engineering information in the Supplemental Environmental Report for the Hardy County Public Service District (USDA, Rural Utilities Service 2004) suggested 360,000 gpd as a “guaranteed” minimum output. This was determined by simply calculating the daily withdrawal of 360,000 gpd that 400 acre-feet of storage would supply for a year. The “guaranteed minimum” amount does not take into account inflow to the system or losses due to evaporation or seepage. The safe yield analysis for Site 10 indicates that the site will provide about 600,000 gallons per day during drought conditions (Gannett Fleming 2005-2006). This amount falls short of the Sponsors’ projected water demand for the Lost River Subwatershed, requiring that an additional source be identified.

Site 27 is located on Upper Cove Run, a tributary of Lost River. The dam site is located approximately 3.0 miles south of the community of Mathias. This is a seventy-three (73) foot high, compacted earth and rock fill impoundment built for flood control. The site controls 3.75 square miles of drainage area. Because of the small drainage area, this site is not suitable for incorporating water supply.

Site 4 is located on Kimsey Run, a tributary of Lost River. The dam site is located approximately one-half (0.5) mile west of the community of Lost River. This is an eighty-nine (89) foot high, compacted earth and rock fill flood control structure. The dam site controls 32.41 square miles of drainage area. With this site’s drainage area, it has potential for incorporating a dedicated water supply. Given this potential, the NRCS conducted an investigation of the costs and associated

engineering requirements to add 400 acre-feet of water supply to Site 4. The investigation revealed that the elevation of top of dam, auxiliary spillway crest, and intake riser crest would have to be increased. These measures would require draining the lake for at least one construction season as the changes were made to the structure and appurtenances. There would be a loss of the established fishery for three to five years. The costs associated with modifications to Site 4 would be approximately \$9,500,000. This amount does not include road and utility relocations or additional landrights. Modifications to incorporate water supply to this impoundment would not be eligible for funding assistance through the federal PL-534 watershed program. As a result, costs to modify this impoundment to include water supply would lie solely with local sponsoring organization. This alternative is not the most cost-effective option for water supply.

COMPARISON OF ALTERNATIVES

Two alternatives are presented for comparison, The No Action Future Without Project Alternative and Alternative 1. The No Action Future Without Project Alternative consists of no additional sites being built and no additional costs and benefits incurred. The Sponsors have indicated that no flood control dams will be constructed without a water supply component. The Sponsors would likely not build Site 16 for a single purpose flood control, water supply or recreation impoundment. The site would not be constructed as a multiple purpose site outside of the context of a PL-534 project, due to the high costs associated with planning, designing and constructing a dam and the inability of the Sponsors to solely fund the project.

Several problems will continue without the flood control aspect of the proposed dam. People and livestock will remain at risk, while homes, buildings and crops will continue to suffer monetary damages from flood water. Transportation on Route 259 will continue to be disrupted during floods, which will result in economic losses through lost wages, inventory delays and road repairs. Chemicals and fertilizers will continue to be washed from fields and pastures into streams during floods, resulting in water quality degradation.

The lack of a dependable water supply will result in increased demand on ground water, retarded development, and water shortages during droughts. Unregulated stream withdrawals could negatively impact plants, fish and wildlife throughout the watershed as the streams and river are used during periods of drought. Well production rates are low (<50 gpm) due to the low porosity and hydraulic conductivity of the aquifers, which translates to higher investment and operating

costs for the numerous wells required to supply large volume water consumers. The lack of a dependable water supply will also result in higher fire insurance premiums for homeowners and businesses due to insufficient fire protection.

Alternative 1 consists of construction of a multiple purpose impoundment, Site 16, on Lower Cove Run that will provide flood damage reduction and water supply. Site 16 will meet the Sponsors' needs for additional flood damage reduction for the Lost River Valley and it will provide 400 acre-feet of water supply for the needs of current and future residents of the watershed. Incidental to flood reduction and water supply, the development of Site 16 would provide opportunities for fishing and therefore contribute to meeting the demand for this type of recreation in the area.

TABULATION 2
SUMMARY AND COMPARISON OF CANDIDATE PLANS
LOST RIVER SUBWATERSHED

Effects	Existing Conditions As-built Sites 4, 10, 27; completed land treatment	Alternative 1 As-built Sites 4, 10, 27; completed land treatment; construction of Site 16; deletion of Site 23	No Action (Future Without Project) Alternative
Project Investment	\$34,074,800	\$58,131,900	\$0
National Economic Development Account			
Beneficial annual	\$2,550,800	\$3,486,300	---
Adverse annual	\$1,828,100	\$3,092,700	---
Net beneficial annual	\$722,700	\$393,600	---
Flood Damage Reduction benefit	\$457,600	\$584,500	---
Water Quality benefits	\$218,600	\$278,700	---
Changes in Land Use	\$52,900	\$67,400	---
Incidental Recreation benefits	\$736,400	\$872,900	---
Secondary & Redevelopment benefits	\$390,000	\$497,400	---
Water Supply benefits	\$628,800	\$1,118,900	---
Land Treatment benefits	\$66,500	\$66,500	---
Environmental Quality Account			
Concerns	Existing Conditions As-built Sites 4, 10, 27; completed land treatment	Alternative 1 (Site 16 Only)	No Action (Future Without Project) Alternative
Threatened & Endangered Species	No adverse effects identified	No federally listed species expected to be impacted	No federally listed species expected to be impacted
Wetlands	0.39 acres of wetlands adversely impacted. Adverse impacts minimized by creation of shallow water areas in upper end of pools.	No more than 9.6 acres of potential wetlands adversely impacted with construction of Site 16. More than 2 acres are within one foot of the pool elevation in the upper end.	No effects
Waters of the United States	Permanently eliminated 1.94 miles of perennial streams. 2.35 miles of stream subject to temporary inundation.	Site 16 will permanently eliminate 0.52 miles of perennial stream. 0.27 miles of stream subject to temporary inundation by Site 16.	No perennial stream length lost or converted to embankment or lake. No length of perennial stream will be subject to increased temporary inundation.

Continued...

**TABULATION 2
SUMMARY AND COMPARISON OF CANDIDATE PLANS
LOST RIVER SUBWATERSHED**

Concerns	Existing Conditions As-built Sites 4, 10, 27; completed land treatment	Alternative 1 (Site 16 Only)	No Action (Future Without Project) Alternative
Aquatic Resources	Created 107.1 acres of permanent lake resources.	Create 46.6 acres of permanent lake resources with Site 16.	46.6 acres of permanent lake resources would not be created.
Recreation	Created 107.1 acres of flat water public fishing area. Create an estimated 40,217 person/days of fishing recreation annually.	Create 46.6 acres of flat water public fishing area. Create an estimated 7,456 person/days of fishing recreation annually at Site 16.	46.6 acres of flat water public fishing area would not be created. An estimated 7,456 annual person/days of fishing would not be created.
Riparian Areas	3.87 miles of riparian habitat along perennial streams were eliminated. 4.5 miles of lake shoreline were created.	An additional 1.05 miles of riparian habitat along perennial stream to be eliminated with Site 16. An additional 1.57 miles of lake shoreline to be created.	1.05 miles of riparian habitat along perennial stream would not be impacted. 1.57 miles of lake shoreline would not be created.
Prime and Unique Farmland	35 acres of prime farmland taken out of production	27.9 acres of prime farmland taken out of production at Site 16.	Agricultural production on 27.9 acres of prime farmland would not be effected.
Water Quality	Temporarily increased erosion, sediment, turbidity, noise and air pollution during construction. Minimized adverse effects by applying BMPs. Lost River temperature increases minimized by installing cold water releases at Sites 4 and 10. Provide storage capacity for 890.4 acre/feet of sediment.	Temporarily increase erosion, sediment, turbidity, noise and air pollution during construction. Minimize adverse effects by applying BMPs. Lost River temperature increases minimized by installing cold water release at Site 16. Provide storage capacity for 229 acre/feet of sediment at Site 16.	No temporary increase in erosion, sediment, turbidity, noise or air pollution would result from construction. No increase in temperature of Lost River would occur. No sediment storage capacity would be created.

Continued...

**TABULATION 2
SUMMARY AND COMPARISON OF CANDIDATE PLANS
LOST RIVER SUBWATERSHED**

Concerns	Existing Conditions As-built Sites 4, 10, 27; completed land treatment	Alternative 1 (Site 16 Only)	No Action (Future Without Project) Alternative
Land Use and Upland Habitat	416 acres of land utilized to develop 3 existing sites. 211.4 acres of woodland, hayland and pastureland permanently inundated and used for dam, spillway, and borrow. 186 acres of riparian and terrestrial habitats subjected to temporary inundation for floodwater detention.	231.5 acres required to develop Site 16. 86.6 acres of woodland, hayland and pastureland permanently inundated and used for dam, spillway, and borrow. 40.2 acres of riparian and terrestrial habitats subjected to temporary inundation for floodwater detention.	No private land will be converted to public uses. Agricultural and residential uses would remain on 220.7 acres of private land. No woodland, hayland, or pastureland would be altered by construction, permanently flooded or utilized for floodwater detention.
Invasive Species	Invasive plant species already exist in watershed and at site	BMPs will be used to minimize spread of invasive plants	No effect on the invasive plant species already in watershed and at site
Historic and Cultural Resources	Phase I – 29 sites; Phase II – 21 sites; Phase III – 2 sites	Phase I – 13 sites; Phase II – 4	No additional investigations will be done
Other Social Effects Account			
Human health & safety	Improved with 3 structures built, flooding reduced – health & safety improved	Flooding further reduced with Site 16 – health & safety improved	No further improvement in human health and safety.
Dependable water supply	Improved with Site 10	Further improved with Site 16	No further improvement in water supply. Current situation expected to worsen with increasing demand.
Environmental Justice	No environmental injustices are known to exist	No environmental injustices have been identified as a result of project action	no effect

Continued...

**TABULATION 2
SUMMARY AND COMPARISON OF CANDIDATE PLANS
LOST RIVER SUBWATERSHED**

Regional Economic Development Account			
<i>Beneficial Effect Annualized (Benefits)</i>			
Measures	As-built Sites 4, 10, 27; completed land treatment	As-built Sites 4, 10, 27; completed land treatment; construction of Site 16; deletion of Site 23	No further action
Region	\$2,550,800	\$3,486,300	\$0
Rest of Nation	\$0	\$0	\$0
<i>Adverse Effect Annualized (Costs)</i>			
Region (non-federal costs)	\$7,954,100	\$10,801,300	\$0
Rest of Nation (federal costs)	\$26,120,700	\$47,330,600	\$0

ENVIRONMENTAL CONSEQUENCES

This section describes the effects of each alternative on the resources of concern.

Flood Damages

Existing Conditions

Flooding was the original impetus for the Lost River Subwatershed project and it remains a resource concern for Sponsors. Flood damages continue to adversely impact property and human health and safety. Three of the five planned flood prevention structures are completed, reducing the estimated annual flood damages experienced in the watershed. Refer to Table 5 for more information on flood damage reduction benefits. About 43 square miles of drainage are controlled by Sites 4, 10, and 27 out of a total of 183 square miles of drainage in the Lost River subwatershed.

Alternative 1

Alternative 1 will further reduce flooding in the subwatershed. The installation of Site 16 on Lower Cover Run, a tributary to Lost River, will reduce flood damages and increase the amount of drainage controlled by the structure in the subwatershed. With Site 16, a total of about 55 square miles of drainage area will be controlled and flood damages in the subwatershed will be reduced further from the present state. Damage to homes, businesses, roads, bridges, and agricultural property will be reduced. There will be increased agricultural productivity and enhanced quality of life because flooding will be reduced.

No Action Future Without Project Alternative

There will be no further reduction in flooding without the installation of Site 16. Flooding at the current level will continue or slightly increase as the upland areas of the Lost River watershed

develop. Economic damages to agricultural properties, residences, and transportation corridors will continue at the present level. There will be no further improvement to human health and safety and quality of life as it relates to reduced threat of flooding.

Soil Erosion and Sedimentation

Existing Conditions

Table 1 shows that 95,708 acres of land treatment measures have been applied as part of the Lost River Subwatershed Project. An aerial survey made in November 2004 (Cremann, et.al. 2005) documented 32,773 linear feet of severely eroding streambank along the main stem Lost River, as well as 6,801 feet impaired by bulldozer activity.

Alternative 1

Site 16 will trap sediment from the 11.88 square miles of drainage area behind this structure. Because most of the land cover above the proposed Lower Cove Run impoundment is forested, sedimentation from upland sources is believed to be minor. Eroding streambanks, particularly in the downstream portions of Lower Cove Run, appear to be the primary source of sediment. Sediment loads downstream of the proposed embankment will be reduced by the installation of Site 16. In order to avoid or minimize the potential effects of discharging sediment-free water from the impoundment, grade control will be installed below the outlet to dissipate energy and to prevent channel down-cutting.

Any additional land treatment measures that may be applied as part of this project within the Lost River drainage will further reduce upland erosion rates. Damages downstream associated with erosion and sedimentation such as streambank erosion and the formation of mid-channel

bars will be further reduced with the installation of Site 16. This decrease in sedimentation is expected to reduce bar removal and channel clearing activities conducted periodically in Lost River by property owners. Water quality, fish and aquatic habitat will be further improved. A temporary increase in erosion and sedimentation may occur during construction of the project on Lower Cove Run. However, these adverse effects of construction will be minimized by the implementation of best management practices (BMPs) at the site.

No Action Future Without Project Alternative

Under the no action alternative, Site 16 would not be constructed. Sediment originating from the 11.88 square mile upstream drainage of Lower Cove Run would not be contained. Excessive sediment from eroding streambanks in the downstream portion of Lower Cove Run would not be reduced and it would be transported to the Lost River main stem. Flood elevations on Lower Cove Run below the impoundment site and the Lost River main stem would not be reduced and there would be no reduction in sediment deposition or damage to crops and fertility losses and other impacts to farm productivity associated with unabated flooding. Aquatic habitat and water quality improvements from reduced turbidity and suspended sediment downstream of the proposed Lower Cove Run project would not be realized.

Agricultural Productivity

Existing Conditions

Agricultural productivity along the Lost River floodplain has been improved with the installation of 3 dams and the land treatment program. The three existing impoundments required 416 acres of private land to be converted to public uses, including 35 acres of prime farmland. Tables 5 and 6 show the monetary benefits associated with improved agricultural productivity.

Alternative 1

Alternative 1 will further enhance agricultural productivity by reducing erosion, sedimentation, and flooding in the watershed. The installation of Site 16 will further improve the productivity of hayland and cropland in the Lost River floodplain by reducing the magnitude and frequency of flooding. With less flooding, repairs to fencing and other farming infrastructure will be required less often. Farm incomes will be further improved. Approximately 220.7 acres of private land will be converted to public uses, including 28 acres of prime farmland. There is no agricultural production on Forest Service lands impacted by the project so there are no effects with regard to this resource concern on Forest Service property.

No Action Future Without Project Alternative

Under the no action alternative, Site 16 would not be constructed. Agricultural productivity would continue at current levels as there would be no additional reduction of flood elevations on the Lost River floodplain. The 220.7 acres of privately owned land, including nearly 28 acres of prime farmland, would remain in agricultural uses.

Water Supply

Existing Conditions

Water supply has become an important resource concern since the inception of the 1974 Lost River Subwatershed Plan – FEIS. The current demand for water supply is discussed in detail in the “Need for Supplement” section and in supporting documentation included in Appendix E. Supplement #3 to the 1974 Work Plan – FEIS also discussed the need for water supply. All the

entities in the watershed - residents, farmers, businesses, Lost River State Park, and schools – rely on ground water or springs for water supply sources.

Alternative 1

Alternative 1 will meet the short term and help meet the long term water supply needs of the Lost River Valley. Economic and agricultural activities will be enhanced with a more dependable water supply. Adequate infrastructure in the form of a dependable rural water system will allow better community planning and growth. An assured water supply will create the opportunity for industrial growth in the Valley. Water sampling information indicates suitable water quality for a public water supply. Water test results are displayed in Appendix D.

No Action Future Without Project Alternative

Water supply demands will continue to increase in the future, even without the construction of Site 16. There will be increased pressure on groundwater resources as private wells are used for future development. There may be unregulated withdrawals from surface waters, reducing the surface water quantities to levels that could harm fish and wildlife. The detrimental effects of water shortages and droughts will continue without additional source water development to address future needs. In the long term, economic development will be hampered by lack of dependable water supplies. With the no action alternative, water shortages will occur sooner and more frequently.

Recreation

Existing Conditions

Several recreational facilities have been added in or near the Lost River Subwatershed since the 1974 Work Plan – FEIS was developed. The US Forest Service offers fishing, boating,

swimming, camping, picnicking, and other activities at the Trout Pond Recreation Area in George Washington National Forest. Additionally, Lost River State Park has many amenities for residents and tourists, including a swimming pool, cabins, horseback riding, playgrounds, and camp sites. Also, recreational opportunities are available at Warden Lake. There continues to be a high demand for fishing in the area, as is evident by the fishing pressure at Lost River Sites 4 and 27. It is expected that there will be intensive use of the lake at Site 10 once the fishery there is established. WVDNR continues to invest in these fisheries in the form of fish stocking, fishery management and the maintenance of public access. Other than fishing, existing developed recreational facilities in or near the watershed appear to be sufficient to meet the recreational demand.

Alternative 1

Alternative 1 eliminates the developed recreational purpose originally associated with Site 16. Existing developed recreational facilities in or near the watershed duplicate many of those originally proposed for development at Site 16. Recreational features to be eliminated include campground, picnic areas, picnic shelters, access roads and parking areas, playground, swimming beach, sanitary facilities and waste water treatment. Amenities associated with fishing, such as boat launching ramp (non-motorized or electric motors only) and parking, will remain a part of the Site 16 proposal. The elimination of the developed recreation components will reduce the amount of Forest Service and private land required to implement these measures. Also, there will not be competition between the Forest Service, state and private recreational amenities and those initially proposed as part of the Lost River Subwatershed Project. It is estimated that 7,456 angular-days of fishing recreation will be provided annually once the Site 16 fishery is established.

No Action Future Without Project Alternative

Under the no action alternative, Site 16 would not be constructed. The 46.6 acre permanent impoundment would not be created and the opportunity for 7,456 annual angular-days of fishing recreation would not be realized. Limited fishing opportunities would remain on the existing perennial stream at the Lower Cove Run site.

Water Quality

Existing Conditions

The Lost River Watershed was added to the West Virginia 303(d) list of water quality impaired waterbodies for fecal coliform bacteria in 1996 (US EPA 1998). This listing was the result of fecal coliform bacteria levels exceeding the maximum allowable standard of 200 colonies per 100 milliliters for samples collected in the Lost River Watershed. Accordingly, Total Maximum Daily Loads (TMDLs) were developed in 1998 to establish allowable loadings to reduce pollution from both point and non-point sources in order to restore and maintain the quality of this water resource. The non-point source model developed in conjunction with this TMDL indicated that water quality standards will be achieved if fecal coliform loads are reduced by an average of 33.4 percent throughout the watershed. This average was comprised of reductions of 38.3 percent from pastureland, 12.8 percent from forestland and 37.8 percent from cropland.

Water quality data from the USGS gage station at McCauley (station number 01610200) was obtained from the internet site <http://nwis.waterdata.usgs.gov/nwis/gwdata>. Data for a variety of parameters exists for the period of record from January 1972 through August 1995. No records were posted for water quality after 1995. Since the existing Lost River dams were completed in

1996, 1998, and 2005, no water quality data from this station were available to show if the three impoundments affected water quality at the McCauley site.

Water quality testing was performed by the US Geological Survey from October 1988 to July 1989. These water samples were collected from the same tributary streams and the upper Lost River main stem as were the early 1970 samples (1974 FEIS). Average water quality values were listed in the 1990 Lost River Supplemental Information Report as: pH 6.7, dissolved oxygen 11.2 mg/l and hardness 37.1 mg/l.

In February 1994, water quality on Upper Cove Run was tested using field methods. These data revealed a pH of 7.1, temperature of 4.3 degrees Centigrade and dissolved oxygen of 13.1 mg/l. Camp Branch of Bakers Run was sampled on May 25, 2000, by NRCS personnel and analyzed by a commercial laboratory. Camp Branch laboratory analyses is contained in Appendix D.

Alternative 1

Water quality data specific to Lower Cove Run were obtained from several sources. The US Forest Service provided water quality data collected in 1990, 1991, 1992, 1995 and 2002. The WV DEP provided water sample results collected in June 2000. Most recently, samples from Lower Cove Run above and below the proposed project site were collected January 2006 by the WV Department of Agriculture. The results of these analyses indicate good water quality in Lower Cove Run. The results of the water quality testing are contained in Appendix D.

The TMDL for fecal coliform in the Lost River (USEPA 1998) indicated that no study samples from Lower Cove Run exceeded the West Virginia water quality standards for these bacteria. The implementation of Site 16 would result in the removal of about 20 head of cattle and a limited number of horses from pastureland within the proposed project area. The removal of this livestock from the fields adjacent to Lower Cove Run will have the potential to reduce coliform bacteria loading to Lost River as specified in the 1998 TMDL. Coliform bacteria from upland wildlife populations in the Lower Cove Run drainage area, including the National Forest System lands, are not expected to change. The presence of Canada Geese, should they establish residence on the proposed Site 16 impoundment, could offset the reduced coliform bacteria loading that may result from the removal of livestock along Lower Cove Run.

The accelerated land treatment measures applied within the Lost River drainage have improved land cover and hydrologic conditions resulting in reduced runoff and erosion from treated areas. The conservation practices have helped limit water quality degradation by reducing nutrient and fecal coliform loading from agricultural sources within the watershed.

The creation of the 46.6 acre permanent lake on Lower Cove Run would result in increased temperatures in the impounded lake water. The 1974 FEIS estimated that surface water temperatures may increase 5 to 10 degrees F. above the normal stream temperatures in late summer. The WVDNR collected temperature data at various elevations within the impoundments at Kimsey Run (Site 4) and Parker Hollow (Site 10) in August and September 2006 (See Appendix D). Cold water releases were installed at Kimsey Run and Parker Hollow at 11 feet (3.35 meters) and 16.5 feet (5 meters), respectively, below the normal water surface

elevations of these impoundments. Temperatures at Kimsey Run were about 6 degrees C (10.4 degrees F) cooler in August and less than 1 degree C (1.2 degrees F) cooler in September when compared to surface water temperatures. Temperatures recorded at Parker Hollow were 9.8 degrees C (17.6 degrees F) and 7 degrees C (12.6 degrees F) cooler than surface temperatures for August and September, respectively. No temperatures upstream or downstream of the impoundments were measured.

To avoid adverse temperature impacts to the fishery downstream of Site 16, a cold water release in the principal spillway structure will be included with the riser configuration. Based on the WVDNR temperature data, the cold water release should have its crest approximately 4 meters (13 feet) below the proposed surface elevation of Site 16. This elevation would have the potential of reducing temperatures of discharges from 5.3 degrees C (9.5 degrees F) and 11.5 degrees C (20 degrees F) below that of a surface-only discharge during late summer.

The accumulation of nutrients in the impoundment is not expected to pose a management problem. Forest litter, comprised of leaves and other vegetative matter, will provide the greatest source of organic material to the impoundment. Nutrient sources from agricultural activities or from human habitation in the Lower Cove Run watershed above the impoundment are negligible. Dissolved oxygen levels in the released water will approach saturation levels as a result of aeration through the principal spillway system. Dissolved oxygen (DO) data collected at the Kimsey Run and Parker Hollow impoundments in August and September 2006 (Appendix D) showed considerable decreases in DO concentrations between surface readings and those taken at a depth of 3 to 4 meters (10 to 13 feet). DO concentrations approached anoxic levels during

August at both Sites. During consultations with WVDNR, the fishery biologist indicated that anoxic water readily absorbs oxygen when given an opportunity to be aerated. Based upon this observation WVDNR expressed no concerns that water passing through the lower riser outlet would result in oxygen deficient discharges downstream. No DO data were collected upstream or downstream of the two impoundments studied.

No Action Future Without Project Alternative

Under this alternative, Site 16 would not be constructed and no water would be impounded on Lower Cove Run. Water temperatures and dissolved oxygen would not be altered and would remain as described in the existing conditions. Organic nutrients from vegetative matter would not accumulate as Lower Cove Run would not be impounded.

Threatened and Endangered Species

Existing Conditions

Consultations with the USFWS were made prior to completion of the 1974 Work Plan – FEIS and subsequent supplements. No adverse impacts to threatened or endangered species, or to habitats critical to their existence, were identified within the project areas.

Concerns for the endangered plant species Harperella (*Ptilimnium nodosum*), that exists along the Cacapon River more than 50 miles down stream of the Lost River Project, were discussed in the 1990 Supplemental Information Report. It was determined that no adverse effects to this plant species were expected due to the distance it is located down stream.

Alternative 1

In 2005 consultations with the USFWS were made regarding the proposed Lost River Site 16 project component on Lower Cove Run. The USFWS indicated that “No federally listed endangered and threatened species are expected to be impacted by the project.” The addition of water supply as a purpose to Site 16 is not expected to impact listed species. No adverse impacts to endangered or threatened species were identified on National Forest System lands.

No Action Future Without Project Alternative

Under the no action alternative, Site 16 would not be constructed and there would be no adverse impact to any federally listed endangered or threatened species.

Environmental Justice

Existing Conditions

The Lost River Subwatershed is rural and predominately agricultural. There are no federally recognized tribes and there is a very low minority population in the watershed. Farming is the primary occupation although most families have supplemental off-farm income. The watershed is 99% white. There is no indication that there are environmental justice concerns associated with this project.

Alternative 1

There is no effect on environmental justice with implementation of Alternative 1 on any lands, including Forest Service lands. Public participation opportunities have been made available in the watershed, facilitating access to all interested persons. No people, groups or income classes will be impacted disproportionately via this action.

No Action Future Without Project Alternative

There is no disproportionate effect on minorities, tribes, or low-income persons without the construction of Site 16.

Aquatic Resources

Existing Conditions

Aquatic resources were evaluated in the supplemental documents prepared prior to the implementation of the three existing sites. The three completed sites converted 10,220 linear feet of perennial stream, amounting to approximately 4.7 acres, to 107.1 acres of permanent lake habitat. The stream resources originally supported populations of native non-game fish species. Site 4 on Kimsey Run also supported populations of smallmouth bass and rock bass. Trout were also stocked in Kimsey Run four times per year by the WV DNR to maintain a put and take trout fishery.

The 107.1 acres of permanent lake habitat are managed by WV DNR as warm-water largemouth bass and bluegill fisheries. The Kimsey Run (Site 4) impoundment is also stocked with crappie and channel catfish and receives trout stocking every two weeks from February through May. Site 10, at Parker Hollow, has received habitat enhancements designed to create an “exceptional channel catfish” fishery at that impoundment. Site 10 and Site 27 also have the potential to receive trout stockings in the future if fisherman demand exists and hatchery produced fish are available. Public access is permitted at each of these impoundments.

Aquatic invertebrates collected from the converted stream reaches included dragonfly, stonefly, mayfly, caddisfly, snail and crayfish species.

Alternative 1

An evaluation of the fishery resources for Lower Cove Run was conducted on April 25, 2005, by the WVDNR (See Appendix D). A 100 meter (328 feet) segment of the stream, in the location of the proposed embankment, was sampled using triple pass backpack electrofishing methodology. Fish species collected included brook trout, central stoneroller, mottled sculpin, greenside darter, fantail darter, blacknose dace and longnose dace. A total of 985 individual fish were collected during this survey. Only three individuals of the total sample were brook trout. The total estimated standing stock of the 100 meter reach sampled was 3.785 Kg (8.36 lbs). Brook trout comprised 0.004 Kg (0.009 lb) of the estimated standing stock. Portions of Lower Cove Run upstream of the project area are stocked with trout by the WV DNR. The stream receives one trout stocking per month from February through May. Fishing access is limited on the privately owned portion of the stream.

The small number of young-of-the-year brook trout collected during the April 2005 fish survey suggests that this species may have reproduced in Lower Cove Run. The discussion in the 2005 survey indicated that a fishery survey conducted on Lower Cove Run by the US Forest Service in 1965 resulted in no trout species being observed. Following this survey, 76 pounds of brook trout were released in March 1965 and in May of that same year 61 pounds of rainbow trout were stocked. The WVDNR conducted an electrofishing survey on Lower Cove Run on October 10, 1973, about one mile upstream from the mouth. No trout were observed during this survey;

however, smallmouth bass and rockbass were collected. The presence of smallmouth bass and rockbass may suggest that water temperature (68 degrees F.), at the time of this survey, was higher than that usually inhabited by trout species (about 62 degrees F. or cooler). This assumption; however, can not be substantiated as WVDNR has occasionally found the bass and trout species both within a single survey. It is not known if the young-of-the-year brook trout observed in the 2005 survey originated from a remnant native population, are offspring from the 1965 stocking or from stockings that were made by WVDNR on Forest Service lands in more recent years.

It is not known if the brook trout population in Lower Cove Run is presently isolated from other potentially self-sustaining populations of brook trout that may inhabit other Lost River tributaries. The distance between these local populations may inhibit the movement of this species from one tributary to another. Low flows and elevated water temperatures during summer may also prevent individuals from moving between suitable habitats in the cooler upper reaches of tributary streams. Cooler temperatures and higher flows during winter may be conducive to brook trout movement in, out and between suitable tributary habitats. The construction of the proposed Site 16 impoundment would result in a barrier to fish movement between the upper reaches of Lower Cove Run and the lower sections of this stream and the main stem Lost River.

Rapid Bioassessment Protocol data were collected by the US Forest Service in April 2002 and March 1995 (Appendix D). Dominant aquatic invertebrates represented in the 2002 dataset include mayflies, fishflies, midges, stoneflies and caddisflies. Dominant invertebrates in the

1995 survey were mayflies and midges. The Macroinvertebrate Aggregated Index for Streams (MAIS) was 17 (very good) for the 1995 survey and 18 (very good) for the 2002 survey.

Under this alternative, about 2,785 linear feet of Lower Cove Run would be displaced by the dam and permanent impoundment. About 1.32 acres of perennial stream would be replaced with a 46.6 acre warm water impoundment. This portion of the stream will be permanently inundated; however, the warm water impoundment will be conducive to the establishment of a bass and bluegill fishery with emphasis on creating an exceptional channel catfish waters. Habitat enhancements for channel catfish will be coordinated by WV DNR fishery biologists. It is possible that a seasonal spring trout stocking program will also be initiated if fisherman demand and availability of hatchery raised trout are adequate. The impoundment's fishery will be stocked and managed for public access by the WV DNR. It is estimated that 7,456 angler days of recreation will be provided annually once the fishery is established.

Aquatic invertebrate populations will shift from those adapted to cold water perennial stream habitats to those favoring warm water lentic habitats.

No Action Future Without Project Alternative

Under the no action alternative, Site 16 would not be constructed. The 46.6 acre impoundment would not be created and there would not be an opportunity to create a warm water bass and bluegill fishery or to create an exceptional channel catfish fishery. About 1.32 acres of cold water perennial stream, comprised of about 2,785 linear feet, would not be converted to a permanent warm water impoundment. Native fish populations in Lower Cove Run, including

the brook trout, would not be further isolated from the Lost River drainage as a result of the construction of the impoundment. Aquatic invertebrate species adapted to perennial cold water streams would remain as the dominant populations in Lower Cove Run.

Land Use and Upland Habitat

Existing Conditions

The effects of constructing Sites 4, 10, and 27 upon land use and upland wildlife habitats were evaluated in the supplemental reports generated prior to the installation of these projects. These three structural sites involved approximately 416 acres of land. Agricultural uses on these acres were eliminated. Upland wildlife habitat on the 107.1 acres permanently inundated was converted to aquatic and riparian habitats. This area included 23.3 acres of forestland, 64.5 acres of pastureland and 9.0 acres of cropland (hayland). An additional 104.3 acres were utilized for the construction of dams, auxiliary spillways and appurtenances associated with these sites. Approximately 64.7 acres of forestland, 32.6 acres of pasture, and 6.5 acres of cropland (hayland) were degraded or eliminated as upland wildlife habitat.

Supplemental plantings and the creation of brush piles adjacent to the dams, spillways and borrow areas were made to diversify habitats and reduce the adverse effects of the project construction. Other habitat strategies, including leaving trees and brushy areas in place and allowing hayland and pastureland areas to grow up, were implemented to minimize impacts. These habitat enhancements were selected in consultation with the WVDNR.

In addition to the 211.4 acres utilized for the dams, spillways and permanent pool areas for the three sites, about 186 additional acres were contained within the floodwater detention areas.

Areas to be temporarily inundated by floodwater storage for Sites 10 and 27 included 20.4 acres of pastureland, 13.5 acres of hayland and 14.4 acres of forestland. Land use for the 135 acres of flood storage pool for Site 4 was not specified. Upland habitat quality was not adversely affected on the flood storage pool areas subjected to temporary inundation.

Alternative 1

Land use and upland habitat for the proposed 231.5 acre Site 16 project area is comprised of 81.0 acres of forestland, 107.4 acres of pastureland, 41.2 acres of hayland (cropland), and 1.8 acres of farmstead (See “Land Use – Cover Type” map, Appendix B). The 10.8 acre portion of the project area on US Forest Service lands is forested. Agricultural uses on the 220.7 acres of private land would be eliminated. Upland wildlife habitat on 46.6 acres will be permanently flooded and converted to aquatic and riparian habitats. This area is comprised of 19.3 acres of woodland, 13.9 acres of hayland (cropland) and 11.0 acres of pasture. The 2.4 acre (hayland, pastureland, and woodland) difference is a result of the overlap of permanent pool area and the footprint of the dam structure. An additional 40.2 acres will be utilized for the construction of the dam and auxiliary spillway structures. This area is currently comprised of 9.3 acres of woodland, 23.2 acres of pastureland and 7.7 acres of hayland.

In addition to the areas to be utilized for the dam, spillway and permanent pool, an additional 40.2 acres will be periodically inundated by the floodwater retention pool. This area is comprised of 17.4 acres of woodland, 12.2 acres of hayland, 10.4 acres of pastureland and 1.6 acres of farmstead. The difference in acreages is a result of area overlap for the auxiliary spillway and the flood retention pool.

Areas to be utilized for the construction of the dam, auxiliary spillway and the associated borrow areas will permanently alter the existing upland habitats. The dam, spillway and borrow areas, not permanently inundated, will be revegetated with grass and legume seed mixtures.

Supplemental planting of trees and shrubs, where they will not interfere with the function of these structures, will be made to diversify habitat. Forestland will be cleared within the permanently inundated area in order to minimize the collection of woody debris around the outlet structure of the dam. Tree stumps and vertical stems along Lower Cove Run upstream of the embankment will be left in place to provide cover for fish and other aquatic species. A selection of tree tops and other woody materials removed from the dam and permanent pool areas will be anchored in the upper end of the permanent pool for fish cover. Brush piles or windrows will be placed above the floodpool to provide cover for terrestrial species.

Upland areas to be subjected to temporary inundation for floodwater retention will not be appreciably impacted by the temporary flooding. Woody vegetation in the flood storage pool areas that are not utilized for construction activities will be left in place. Flood storage pool areas, which are presently in grassland uses, will be allowed to evolve through natural vegetative succession or will be enhanced by artificial plantings of tree or shrub species. Habitat enhancements associated with the Site 16 project will be coordinated with the WV DNR and the USFWS.

Some tree removal is planned for the US Forest Service land that will be permanently inundated. The majority of the 10.8 acre Forest Service land in the floodwater retention pool will remain forested. Refer to the “Land Use – Cover Type” map in Appendix B for more information.

No Action Future Without Project Alternative

Under the no action alternative, Site 16 would not be developed. Land use and vegetative cover on the 231.5 acres identified for the project, including the 10.8 acres of Forest Service land, would not be altered and would remain in uses similar to those described under existing conditions.

Historic, Scientific, and Cultural Resources

Existing Conditions

Cultural resource investigations were conducted during the planning stages for Sites 4, 10, and 27. Copies of cultural resources investigative documents pertaining to the existing sites are available upon request. Also, the 1974 Work Plan – FEIS and subsequent supplements contain detailed discussions of findings and mitigation activities related to construction of Sites 4, 10, and 27.

Alternative 1

A cultural resources identification survey of the Site 16 project area was completed. A total of eight prehistoric sites, five architectural sites, and 15 isolated finds were located. Consultation with the West Virginia State Historic Preservation Office (WV SHPO) indicated that five prehistoric sites warrant further testing or avoidance. One of these five sites can be avoided, and

the other four at this time cannot. No further work is recommended for any of the isolated finds or architectural sites. Phase II work will be completed on the four prehistoric sites before construction of Site 16. One of the prehistoric sites is on Forest Service land. Refer to the Investigation and Analysis section (Appendix C) of this report for more information.

There are no cultural resources listed on the National Register of Historic Places in or adjacent to the Site 16 project area. Near the eastern portion of the proposed dam Site 16 the National Forest has surveyed sections of the forest. No recorded sites are listed near the project. The WV SHPO has concurred with all the NRCS findings. There are no federally recognized tribes in West Virginia, and as such, none were contacted in regards to this project. Hardy County is not claimed as an ancestral homeland to native tribes.

In March of 2005 a private consulting firm conducted a Phase I Survey of the proposed dam Site 16. Resources at the WV Division of Culture and History in Charleston, WV were consulted, including the National Register of Historic Places. A full Phase I Report was submitted to SHPO and accepted in July of 2005.

The Forest Service has received a copy of the Phase I report and will be involved in the planning of the Phase II work to be conducted on the site situated on National Forest land. The WV SHPO will also be consulted in the planning of the Phase II work. If mitigation for any of the four sites requiring Phase II work is necessary, consultation with the WV SHPO will be conducted to develop a work plan for each site.

After completion of the Phase I Archaeological Survey, the auxiliary spillway was realigned. This realignment impacts an area that was not previously surveyed. Based on the surrounding area, this area is low probability for cultural resource sites. A complete Phase I Archaeological Survey will be conducted on this area prior to finalizing project designs.

No Action Future Without Project Alternative

Without construction of Site 16, there will be no additional cultural resources investigations and no additional discoveries.

Invasive Species

Existing Conditions

Invasive species, especially invasive plant species, are of concern in all watersheds. According to the WV DNR website (www.wvdnr.gov/wildlife/invasivewv.shtml), 663 species of non-native invasive plants are found outside cultivation in West Virginia. A variety of invasive plant species already exist in the Lower Cove Run watershed; however, these have not been inventoried. Federal and state natural resource agencies have ongoing programs to monitor invasive species, but no specific information exists on conditions in the Lost River Subwatershed.

Alternative 1

Implementation of Alternative 1 and any additional land treatment measures will incorporate best management practices to reduce or minimize opportunities for invasive plant species to become further established. Construction areas and other sites with disturbed soils will be reseeded with

desirable plant species as quickly as possible, reducing the opportunities for spread of invasive plant species. Precautions will be taken to avoid the spread of noxious weeds in accordance with state and federal guidelines.

No Action Future Without Project Alternative

Under this alternative, Site 16 will not be constructed. Land disturbances associated with project implementation would not occur and opportunities for the introduction or dispersal of invasive plant species would be avoided. There will be no effect upon invasive species without further project action.

Prime and Unique Farmland

Existing Conditions

The effects upon prime and unique farmland resulting from the installation of the three existing structural sites were addressed in the supplemental reports prepared prior to the installation of those sites. No prime farmland soils acres were identified for areas utilized for Sites 10 and 27. Thirty-five acres of prime farmland soils were identified within the area developed for Site 4.

Alternative 1

The project area under consideration for Site 16 is comprised of approximately 231.5 acres of land. About 220.7 acres of this land are in private ownership and about 10.8 acres are already in public ownership by the US Forest Service. Nearly all of the private portion of land in the project area is utilized for agricultural uses. These uses include grassland production on hayland

and pasture to support raising beef cattle and horses. Some acreage has been used for cropland in the past. Three residences (homesteads) are within the proposed project boundary.

Of the total 220.7 private acres, about 197.7 acres are classified as prime or important farmland (See Farmland Map, Appendix B). This includes prime farmland (27.9 acres), statewide important farmland (26.6 acres) and locally important farmland (143.2 acres). None of the US Forest Service land in the proposed project area is classified as prime or statewide important farmlands.

Under this alternative, approximately 220.7 acres of private land would be placed in public ownership for the implementation of the Site 16 project. As a result, 27.9 acres of prime farmland, 26.6 acres of statewide important farmland and 143.2 acres of locally important farmland would be removed from agricultural production due to the implementation of Site 16.

Flowage easements amounting to about 40 acres below the auxiliary spillway would be needed in the event water from the impoundment discharges through that outlet. Agricultural activities would not be restricted on this acreage with the exception that homes, barns, storage sheds or other like improvements would not be permitted within the flowage easement area. Refer to the Important Farmland map in Appendix B for more information.

No Action Future Without Project Alternative

Under this alternative, Site 16 would not be developed. The 220.7 acres of private land would remain in private ownership. About 197.7 acres, including 27.9 acres of prime farmland, 26.6

acres of statewide important farmland and 143.2 acres of locally important farmland, would remain available for agricultural uses. This alternative would also eliminate the need for approximately 40 acres of flowage easement below the auxiliary spillway.

Public Health and Safety

Existing Conditions

The implementation of 3 flood prevention structures has improved public health and safety by reducing flooding in the watershed. Public health and safety is also improved by providing a dependable raw water supply for future needs.

Alternative 1

Alternative 1 will further improve human health and safety by providing additional flood damage reduction in the watershed. Dependable, long-term water supplies will be available at Site 16, coupled with the existing water supply at Site 10. There will be reduced risk to life and property with construction of Site 16. Human health and safety will be further improved with the reduction in flooding.

No Action Future Without Project Alternative

Under this alternative, Site 16 would not be developed. There would be no further reduction in flooding and no further improvement in the health and safety of residents who may be at risk due to flooding. There would be no further reduction of flooding to transportation corridors in the watershed and no further improvement in human health and safety related to this concern.

Riparian Areas

Existing Conditions

Riparian habitat was described in the supplemental environmental documents prepared prior to the implementation of Sites 4, 10 and 27. Riparian areas affected by these sites were mostly forested with deciduous tree species. A total of 10,220 linear feet of perennial streams were converted to dam structures and permanent flat water impoundments. Riparian zones associated with these impacted streams were estimated to be 20,440 linear feet in length. These riparian areas were converted to 107.1 acres of flat water environment with a shoreline length of 23,750 feet. Shoreline vegetation was left intact where possible and was allowed to succeed through natural processes. Stock piled wetland topsoil was distributed in shallow water areas of permanent pools to enhance the rapid re-establishment of wetland vegetative species.

Alternative 1

Riparian zones along both sides of Lower Cove Run are mostly forested. The forest cover is dominated by deciduous tree species with scattered conifers and eastern red cedar. The area in the upper portion of the stream in the project area is well shaded by the tree canopy and the streambanks sustain good cover comprised of tree roots, woody debris, boulders and large cobble and undercut banks. In the lower portion of the project area, Lower Cove Run riparian cover has a less dense canopy and an abundance of multiflora rose bushes in the vegetative understory. Streambank erosion is more prevalent in that area and sediment bars, comprised of large cobble and gravel, separate the normal stream channel and the floodplain. Cattle have access to the stream throughout the entire lower portion of the project area reach.

Under this alternative, about 2,785 linear feet of Lower Cove Run would be impacted by the construction of the dam, the permanent pool, and the principal spillway outlet. Approximately 5,570 linear feet of riparian habitat would be altered by Site 16 installation. All trees in the area of the dam site would be removed to facilitate construction. All trees upstream of the dam and auxiliary spillway, within the permanent pool of the impoundment, will be cut and removed from the permanent pool area. This clearing is necessary to eliminate trees and floating debris from collecting around the riser (outlet structure) and interfering with its function. In the area upstream of the embankment, stumps and the lower portion of vertical stems will be left in place for habitat enhancement. The severed portions of some trees will be strategically anchored in the pool area for fish cover and others will be used for the construction of brush pile habitat on upland areas above the flood pool. The approximately 825 feet of Lower Cove Run between the principal spillway outlet and the lower project property boundary will have enhanced riparian vegetation because cattle will no longer have access to the stream and streambanks in that area.

Once the permanent pool of the impoundment is filled, about 6,840 feet of lake shoreline will be created. This area does not include the 1,450 feet of permanent pool shoreline across the upstream face of the dam. Forested areas above the permanent pool will not be removed except where necessary to facilitate construction or for the excavation of borrow material.

No Action Future Without Project Alternative

Under this alternative, no riparian habitat along 2,785 linear feet of Lower Cove Run would be altered as a result of the implementation of Site 16. No tree removal would occur to reduce the hazard of floating debris interfering with the operation of the principal spillway structure. Cattle

would continue to have access to Lower Cove Run, and the riparian areas adjacent to it, on the privately owned land in the project area. Lake shoreline totaling approximately 8,290 feet, and riparian areas associated with the impoundment, would not be created. Existing conditions on the 10.8 acres of National Forest System lands would be maintained.

Waters of the US

Existing Conditions

The individual affects of the three existing impoundments upon the waters of the US were addressed in the respective environmental documents for each site. Cumulatively, the dam structures and permanent pools permanently impacted 10,220 feet (1.94 miles) of perennial streams in the watershed. The impoundments at Sites 4, 10 and 27 total 107.1 acres of permanent pool area. Additionally, approximately 12,430 feet (2.35 miles) of perennial streams were subject to periodic inundation in the flood storage pools.

Alternative 1

Approximately 5,985 linear feet of Lower Cove Run lies within the proposed Site 16 project limits. Lower Cove Run is a perennial cold water stream that is 4.6 miles long and drains an area of 11.88 square miles. Lower Cove Run is from 12 to 30 feet wide through the project area and has an average depth of 12 to 18 inches under normal flow conditions.

Under this alternative, approximately 2,785 linear feet (0.53 miles) of Lower Cove Run would be displaced by the dam structure and permanent impoundment. Of this total, 2,175 feet would be converted from perennial stream to a 46.6 acre permanent impoundment. About 570 linear feet

of the stream would be diverted through the dam structure's principal spillway conduit. An additional 180 feet of the stream below the dam would be replaced by about 140 feet of rock-lined outlet channel. Upstream of the permanent impoundment, about 1,425 feet of Lower Cove Run (between the permanent pool elevation and the auxiliary spillway crest elevation) would be subjected to periodic inundation by the 100-year flood storage pool. An additional 810 feet of the stream (between the auxiliary spillway crest and top of dam elevation) may be subject to infrequent inundation; however, this flooding is not expected to differ from the normal out-of-bank flooding resulting from high flows on this reach of the stream. About 825 feet of Lower Cove Run lies between the principal spillway outlet and the proposed downstream limits of the project.

No Action Future Without Project Alternative

Under the no action alternative, Site 16 would not be constructed. Approximately 2,785 linear feet of Lower Cove Run would not be altered by the construction of the dam and 46.6 acre impoundment. An additional 1,425 linear feet of Lower Cove Run would not be subjected to temporary inundation as a result of floodwater detention.

Wetlands

Existing conditions

The effects of implementing the three existing impoundments upon wetlands were addressed in the respective environmental documents for each site. Wetlands of 0.11 acres, 0.20 acres and 0.08 acres were delineated for Sites 4, 10 and 27, respectively. Wetland losses were offset by the shallow water areas created in the upstream ends of the permanent pools associated with each

impoundment. Topsoil layers of impacted wetlands at Site 10 were salvaged and applied to shallow water areas in the permanent pool to enhance the establishment of wetland vegetation.

Alternative 1

Wetland delineations for the Site 16 project area will be completed when project personnel have access to the affected property prior to the Section 404 permitting process. Wetland areas, that may be adversely impacted by the project, have been estimated for this report using hydric soils mapping units, visible land use patterns, visible surface drainage and best professional judgment.

Within the proposed project area for Site 16, approximately 29.55 acres of hydric soils have been identified (see soils description and maps in Appendix B). The majority of these hydric soils are located on the north side of the valley on the north side of Lower Cove Run. Current land use for nearly all of the hydric soils area is hayland and pasture. Cropland applications for some fields have been utilized in the past. Drainage practices consisting of surface drainage ditches were installed years ago and have been maintained by landowners. Because of the drainage practices in place, it appears that the hydrology has been intercepted and channeled away from the area down slope (south) of the drainage ditch that bisects the hydric soils area.

Hydric soils situated above the drainage ditch may have sufficient hydrology to be classified as wetlands. Within this area, approximately 3.0 acres are wet areas below spring seeps. The spring seep areas are comprised of wet meadow, shrub wetland and forested wetland types. Based on hydric soils mapping units, prior land use activities and the maintenance of drainage systems, it is estimated that no more than 12.11 acres of potential wetlands are present within the Site 16 project area.

Under this alternative, approximately 6.61 acres of hydric soils (potential wetlands) will be adversely affected by the construction of the embankment and by the resulting impoundment. About 2.5 acres of potential wetlands (comprised of about 1.9 acres of wet meadow and 0.6 acres of scrub/shrub wetland types) will be above the permanent pool elevation, but within the 100 year flood storage pool. This area will be subjected to temporary inundation by the flood waters. Additionally, about 3 acres of hydric soils are downstream (west) of the dam structure and may be impacted by the excavation of earth material to be used in the construction of the dam. Therefore, it is estimated at this time that no more than 9.6 acres of hydric soils (potential wetlands) will be adversely impacted by this project.

It is estimated that about 1 acre of the upper, shallow end of the permanent impoundment will have a depth of one foot or less. An additional one acre, or slightly larger area, will be one foot or less above the permanent pool elevation in the upper end. The hydric soil areas impacted by previously installed surface drainage and the areas slightly higher than the permanent pool elevation will be enhanced by the higher water tables resulting from the impoundment. These enhancements may be combined with additional mitigation by constructing wetlands in the level area that will be adjacent to the upper end of the permanent pool and in the lower portion of the flood storage pool. Impacted wetlands will have the topsoil layers removed and stockpiled. This topsoil with the associated plant matter and seed content will be distributed in shallow water areas of the impoundment and wetland mitigation sites to facilitate the rapid re-establishment of wetland vegetation.

Wetland delineations will be completed in accordance with the 1987 Corps of Engineers Wetlands Delineation Manual, prior to seeking permits for the project. Currently agency personnel are restricted from access to the private property affected by the proposed Site 16 project. Adversely impacted wetlands, under this alternative, would be mitigated. Based upon estimated impacts to potential wetlands, no more than 9.6 acres of potential wetlands would be subjected to mitigation. Mitigation measures will be installed on property acquired for the project if at all possible. In the event additional mitigation will be required offsite, potential exists for implementing measures on the Edwards Run Wildlife Management Area. This state owned area is located in Hampshire County about two miles north of Capon Bridge.

No Action Future Without Project Alternative

Under the no action alternative, Site 16 would not be constructed and the estimated 9.6 acres of potential wetlands would not be altered by the proposed project. Land use, consisting primarily of agricultural grassland production for cattle and horses, would likely continue. Land management practices, including the maintenance of surface drainage systems, would continue to direct hydrology away from potential wetland areas.

Cumulative Impacts

In addition to the individual components, both existing and proposed, for the Lost River Subwatershed Project in Hardy County, West Virginia, four additional projects that have impacts to land and aquatic resources, have been identified within the same general area. These four projects have either been recently constructed, are currently under construction or are proposed for construction in the foreseeable future. These projects include:

- The West Virginia Corridor H Highway Project;
- Hardy County Public Service District, Baker/Mathias Raw Water Treatment Plant and Water Distribution System;
- The Hardy Storage and Transmission Projects; and
- The Eastern Market Expansion Project.

The **West Virginia Corridor H Highway Project** is comprised of a new 4-lane highway planned from west of Elkins, West Virginia to the Virginia State line east of Wardensville, West Virginia. The total highway project is proposed to be approximately 108 miles in length. The project was divided into ten construction segments that are either complete, under construction or still in design or planning stages.

The **Hardy County Public Service District, Baker/Mathias Water Treatment and Distribution System** is proposed to expand water service within Hardy County. A water treatment plant is proposed for construction below the existing flood retarding/water supply impoundment at Parker Hollow (Site 10). This 350 gallon per minute plant will utilize raw water from the Site 10 impoundment. Land for this treatment facility is currently in public ownership and is available for use by the Hardy County PSD. The treatment plant site was previously disturbed during the construction of Site 10.

A water transmission and distribution system is proposed for the Baker/Mathias areas of Hardy County that will serve an estimated 988 customers once all phases are complete. This system will ultimately consist of approximately 114 miles of water line ranging in size from six to 12

inches in diameter. The proposed system will include eight water booster stations and eight water reservoirs. The total estimated cost of this transmission/distribution system is about \$20,361,000.00.

Due to the estimated cost of these water system proposals, the project has been divided into five phases. Phase I includes the treatment plant at Parker Hollow and about 27.7 miles of water transmission/distribution lines to the Baker, Needmore and Arkansas areas, and along Route 259. This phase will provide water service to an estimated 293 customers. The Hardy County PSD has funding for this phase and expects construction to be completed by 2008. Phase II will connect to the Phase I line about three miles north of Lost City and extend south to the Mathias area. Phase II is estimated to include about 19.5 miles of water lines and will serve about 225 additional customers. Funding for Phase II has not yet been secured. The cost of installing Phase I, including the Water Treatment Plant, and Phase II is estimated to be \$7,945,000 and \$3,205,000, respectively. Detailed information for additional phases is unavailable at this time.

The **Hardy Storage and Transmission Projects** include upgrades and expansion of the storage and transmission facilities associated with natural gas storage and transmission by the Hardy Storage Company, LLC, and a joint venture between Columbia Gas Transmission Corporation and Piedmont Natural Gas Company. This project will develop new storage facilities in a nearly depleted, self-contained geologic formation in the Oriskany sandstone that was used for natural gas production in the 1960s and 1970s. The project will make use of the Lost River field and the Inkerman field as the two main reservoirs. Twelve existing wells will be reconditioned for use in the storage fields and eleven new wells will be constructed for storage on previously undisturbed

sites in Hardy County. Three new wells are proposed to be constructed on existing production well sites in Hampshire County. Pipelines connecting the storage wells and production wells adjacent to the storage fields are proposed.

Transmission pipelines are proposed to connect the storage fields to the Hardy Compressor Station to be upgraded near Mathias (see the Eastern Market Expansion Project discussion below). This compressor station would provide for injections and withdrawals of natural gas in the storage fields, as well as provide for additional compression for gas transmission.

The **Eastern Market Expansion Project** is proposed to improve the deliverability of natural gas from storage fields and to increase natural gas transportation capacity to distribution companies in the Mid-Atlantic region. The project consists of:

- Expanding existing storage fields in Ohio and Kanawha County, West Virginia;
- Increasing compressor capacity at four existing compressor stations in West Virginia; and
- Constructing three sections of 26- to 36-inch diameter pipeline loop in Virginia and Clay and Randolph Counties, West Virginia, totaling 15.5 miles.

The only portion of the Eastern Market Expansion Project that may affect the Lost River Subwatershed is the upgrade of the Lost River compressor station near Mathias, Hardy County. None of the pipeline loop construction or storage field improvements associated with this project are in the Lost River Subwatershed.

Environmental Effects

The Corridor H highway will cross the Cacapon Watershed (including the Lost River subwatershed) in the vicinity of an interchange located at Baker, West Virginia. The highway segment west of Baker, toward Moorefield, has been completed. Approximately 9 miles of this segment lies within the Cacapon Watershed. The segment from Baker east to Wardensville was completed in the fall of 2006. The entire 6.7 miles of this highway segment lies within the Cacapon Watershed. The most eastern Corridor H segment is 6.5 miles long and runs from Wardensville to the Virginia state line. This segment lies entirely within the Cacapon watershed. Approximately 22.2 miles of the Corridor H highway will lie within the Cacapon Watershed.

The Corridor H highway will have converted about 1,784 acres of forestland and 673 acres of farmland, within the Cacapon Watershed, to highway uses when complete. Forest and farmland conversion was estimated to result in a net loss of about 1,602 wildlife habitat units within the Cacapon Watershed. An additional 949 wildlife habitat units were estimated to be lost from secondary impacts resulting from predicted development within the watershed. Impacts to farmland by this highway in Hardy County included the removal from production of about 88 acres of Prime Farmland and 109 acres of Statewide Important Farmland. These amounts comprised 0.06 percent of the total farmland in Hardy County.

Nineteen wetlands comprising a total of 2.66 acres will be impacted by the corridor highway in the Cacapon watershed. These wetlands were estimated to be about 0.28 percent of the wetlands existing within the Cacapon watershed. Wetland types impacted include one forested wetland

(0.24 acres), two scrub/shrub wetlands (0.14 acres), 11 emergent wetlands (1.63 acres) and five areas of open water (0.65 acres).

There is an estimated 96 miles of perennial streams in the Cacapon watershed. The Corridor H highway is expected to impact 9,650 feet of perennial streams as the result of installing pipes and box culverts. An additional 1,350 feet of perennial streams are expected to be relocated, to accommodate highway construction in the watershed.

The Hardy County Public Service District, Baker/Mathias Water Treatment and Distribution System is proposed for construction during the calendar years 2007 and 2008. The water treatment plant will be constructed on 2 to 2.5 acres of land below the Parker Hollow impoundment that is already in public ownership. The water transmission and distribution lines are planned to be installed along existing state and county road rights-of-ways. A small amount of land will need to be acquired in order to construct two water storage tanks and two booster pump stations. The water storage tanks are estimated to require up to 0.25 acres each and the booster pump stations will require no more than 0.1 acres each.

Numerous stream crossings will be involved with the installation of the 47 miles of water transmission and distribution lines. Impacts to these streams will be minimal because stream crossings will be adjacent to roadway crossings. Erosion and sedimentation control measures will be followed and disturbed areas will be revegetated. This project appears to be located entirely within the Lost River watershed.

The **Hardy Storage and Transmission Projects** was scheduled for construction during the calendar years 2006 and 2007. The report estimated that 508.2 acres of land would be involved to install the compressor station, new pipelines, well sites and other facilities. Of this total, 152.9 acres would be used temporarily for construction and 355.3 acres would used for permanent operation. Most of this project would involve sites, access roads and rights-of-ways already utilized for natural gas operations. The Environmental Assessment for this project (Federal Energy Regulatory Commission 2005) estimated that about 50 acres of forestland would be disturbed to install these facilities and 33 of these acres would be maintained for permanent operations. The report also estimated that about 28 acres of farmland would be disturbed during installation and 16 of these acres would be maintained for permanent operation. Restoration to prior uses was indicated for the 28 farmland acres. In addition, 4 acres of prime farmland would be utilized for the compressor station near Mathias. These acres would be removed from farmland uses. No other classified farmland impacts were identified.

The Environmental Assessment also indicated that approximately 72 wetland areas would be affected by natural gas facility installation. Effected acres of wetlands totaled 7.12 acres. Impacted wetlands were to be restored to original contours and revegetated with an approved wetland seed mixture. One hundred fifty two stream crossings were anticipated to be required to install pipelines. These include 54 perennial streams, 55 intermittent streams and 43 ephemeral channels. Best management practices in accordance with federal and state permit conditions were identified to minimize impacts to affected streams. No long term adverse impacts to fisheries were anticipated. Nearly all of this project will be within the Cacapon watershed.

The Eastern Market Expansion Project will only involve the Lost River watershed at the compressor station location near Mathias. Land resources involve about 6.9 acres that are within the existing Columbia Gas compressor facility.

Summary and Conclusions for Cumulative Impacts

The Appalachian Corridor H FEIS (WVDOT and FHWA 1996) stated that there are 692 square miles (442,880 acres) in the Cacapon River Watershed. The projects described above, along with the three existing Lost River impoundments and the proposed Site 16 project, collectively require approximately 3,623 acres of land (Tabulation 3) in the watershed. This amount comprises about 0.8 percent of the land area in the watershed. The Corridor H FEIS also stated that 82 percent of the watershed was comprised of forestland (363,162 acres). Forestland required for the projects in Tabulation 3 was about 1,951 acres or approximately 0.5 percent of the forestland in the Cacapon Watershed.

Farmland was estimated in the Corridor H FEIS to be 75,290 acres or 17 percent of the Cacapon Watershed. Soils classified as prime, statewide important and locally important farmland in the Cacapon Watershed total 98,391 acres (USDA-NRCS SSURGO data). The difference is likely because not all of the prime and important farmland classified soils are utilized for farm land uses. Similarly, some farm land uses include soils that are not classified as prime or important.

NRCS SSURGO data indicates there are 16,437 acres of prime farmland, 21,700 acres of statewide important farmland and 60,254 acres of locally important farmland in the Cacapon Watershed. Tabulation 3 shows that the cumulative acres of classified farmland converted for these projects total 155 acres of prime farmland, 136 acres of statewide important farmland and

143 acres of locally important farmland. These numbers represent 0.9 percent, 0.6 percent and 0.2 percent of these farmland categories, respectively.

Tabulation 3. Summary of cumulative impacts of the Lost River Subwatershed Project and other past, present and future projects in the Cacapon River Watershed, West Virginia.

AFFECT	Lost River Site 16	Lost River Sites 4, 10 and 27	Corridor H Highway	Hardy PSD water treatment and Distribution	Hardy NG Storage and Transmission Project	Eastern Market NG Expansion Project	Totals
Project Land Requirements (acres)	231.5 ac	416 ac	2,457 ac	3.2 ac	508.2 ac	6.9 ac	3,623 acres (0.8%)
Forest land converted (acres)	28.6 ac	88 ac	1,784 ac	0.5 ac	50 ac	0	1,951 acres
Farmland Converted (acres)	197.7 ac	146.5ac	673 ac	0	28 ac	0	1,045 acres
Prime Farmland (acres)	27.9 ac	35 ac	88 ac	0	4 ac	0	155 acres
Statewide Important Farmland (acres)	26.6 ac	None identified	109 ac	0	0	0	136 acres
Locally Important Farmland (acres)	143.2 ac	None identified	0	0	0	0	143 acres
Impacted Wetlands (number)	1	5	19	None specified	72	0	97
Impacted Wetlands (acres)	9.6 ac est	0.39 ac	2.66 ac	None specified	7.12 ac	0	19.8 acres (2.3%)
Perennial Streams							
Number Impacted (crossed)	1	3	21 (8 box culverts & 13 pipes)	Not specified	54	0	79
Length converted (feet)	2,785ft	10,220 ft	9,650 ft	0	0	0	22,655 feet
Length disturbed (feet)	140 ft	900 ft	1,350 ft	Not Specified	2,700 ft	0	5090 feet

The Corridor H FEIS estimated that there are 862.7 acres of wetlands in the Cacapon River Watershed. Tabulation 3 estimates that 19.8 acres may be impacted collectively by the listed projects. This amount comprises approximately 2.3 percent of the wetlands in the watershed. This number does not take into account that mitigation is required to offset impacts to wetlands that can not be avoided. This mitigation most often requires a number of acres of wetlands to either be constructed or enhanced that equal or exceed the wetland acres adversely impacted.

The total length of perennial streams in the Cacapon River Watershed is estimated to be 96 miles (506,880 linear feet) in the Corridor H FEIS report. Tabulation 3 estimates that about 22,655 linear feet of these streams were eliminated or enclosed within culverts or pipes. This amount, assuming that all of the impacted streams were perennial streams, amounts to 4.5 percent of the perennial streams within the watershed. An additional 5,090 linear feet (1.0 percent) of perennial streams in the watershed were disturbed, but not eliminated by these projects. Disturbed streams included those altered or relocated by the construction projects and those where natural stream restoration measures were applied for mitigation.

This report has considered the cumulative impacts upon land and aquatic resources that have resulted, or is expected to result, from the implementation of major construction projects within the Cacapon River Watershed. The improvement of natural gas facilities and the construction of the Corridor H highway have benefits far and beyond the Cacapon and Lost River Watersheds. The two natural gas projects are intended to improve the availability of natural gas throughout the entire eastern United States. Natural gas supplies may be improved locally as a benefit of these projects. The Corridor H Highway will ultimately connect Interstate 81 in Virginia with Interstate 79 in West Virginia. This east-west highway will improve transportation from the

more densely populated areas of Virginia to points west including much of West Virginia. By improving transportation, the mountainous Eastern Panhandle area, including the Cacapon River Watershed (and Lost River Subwatershed) is expected to become more accessible and desirable for residential development. Commercial development as a result of the new highway is also anticipated.

Growth trends in Hardy County support the need for the Lost River Subwatershed project, including the proposed Site 16 impoundment on Lower Cove Run. New highway construction and population expansion from the east coast metropolis to the more rural Hardy County is already occurring, underscoring the need to plan and implement measures for watershed protection, flood protection and sustainable water supplies to meet future needs.

ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

There are no adverse environmental effects that cannot be mitigated for with Alternative 1.

Adverse social effects related to property acquisition for the effected landowners is acknowledged. Financial compensation will be provided to residents whose property is affected by project actions.

THE RELATIONSHIP BETWEEN SHORT-TERM USE AND LONG-TERM PRODUCTIVITY

In the short-term, there will be construction impacts associated with Alternative 1. Adverse impacts such as erosion and sedimentation will be minimized by the use of best management practices during construction. Minimal land disturbance and temporary mitigation measures will be implemented to reduce or replace short term losses. In the immediate area of the planned structures, long term land use will be changed from agricultural production to a lake

environment. Long term productivity of downstream properties will be further enhanced by reduced flooding and increased and improved water supply.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Land obligated by Alternative 1 will be converted from private to public land. Presently, this land is in agricultural, forestry, and residential use. Approximately 0.4 acres of US Forest Service land will be permanently converted to impounded water by Alternative 1. An additional 10.4 acres of US Forest Service land will be periodically inundated. Labor and energy required for construction and maintenance of structural measures associated with Alternative 1 will be irretrievably committed. Federal funds for Alternative 1 will be expended.

POSSIBLE CONFLICTS WITH LAND USE PLANS, POLICIES, AND CONTROLS FOR THE AREA

There are no known conflicts with any policies or plans in the watershed with respect to Alternative 1.

RISK AND UNCERTAINTY

Estimating project costs and benefits involves a certain degree of risk and uncertainty. Assumptions made during the planning process are based on the best available technology and information at the time of planning. Extended delays between planning and implementation increase the degree of risk and uncertainty. Estimated project costs are based on computed work quantities multiplied by the appropriate unit cost for that type of work. Unit costs are based on historical data from similar projects, indexed to current price levels. Costs can be influenced by several economic factors that cannot be predicted with certainty during the planning process.

Fuel shortages, unforeseen labor and materials shortages, natural disasters, and international incidents can adversely affect costs.

Economic benefits are based on material values of floodplain property and infrastructure. Such property is expected to become more valuable in the future as personal income increases. It is probable that some monetary and non-monetary benefits have not been fully captured. Finally, there is inherent uncertainty in estimating the social and environmental costs associated with Alternative 1 because values and judgment vary among interested parties.

Water supply projections are based on trend data and typical development patterns associated with new highway construction. Demands for water may exceed estimates if a major industrial or commercial water user locates in the watershed. Additionally, a prolonged drought or unforeseen decline in the dependability of groundwater could drastically change the demand for a public water supply.

RATIONALE FOR RECOMMENDED ALTERNATIVE

There are two alternatives for consideration in the context of this report. The No Action Future Without Project (NAFWP) Alternative and Alternative 1. Under the NAFWP Alternative, there would be no additional flood protection and no additional water supply. Needs for these resource concerns would not be met. The NAFWP Alternative is the National Economic Development (NED) Plan because it is the alternative with the greatest net benefits. However, the NED Plan does not meet the Sponsors' needs so it is not the recommended alternative. Alternative 1 provides the additional flood protection and water supply identified as needs by the

Sponsors. Alternative 1 also provides non-monetary benefits in terms of improved human health and safety and reduced future stress on existing water supplies. These non-monetary benefits are not reflected in the NED calculations. Alternative 1 is the Recommended Alternative because it best meets the Sponsors' needs and is a viable alternative.

CONSULTATION AND PUBLIC PARTICIPATION

There have been opportunities for public participation at monthly conservation district meetings, WV State Conservation Committee quarterly meetings, and also at Hardy County Commission meetings. Consultation with other interested agencies and entities has also been conducted. An agency coordination meeting was conducted at the proposed site in October 2005. Additionally, a widely-advertised public scoping meeting was held in the watershed in August 2006. State and federal agencies such as the US Forest Service, US Fish and Wildlife Service, WV Division of Natural Resources, and the State Historic Preservation Office have been consulted during the planning process.

A public scoping workshop was held on August 1, 2006 at East Hardy Middle School to provide interested individuals and agencies an opportunity to give input into the development of the EIS. There were 25 people in attendance at the workshop, including 11 from the implementing and cooperating agencies and local sponsoring organizations. One other governmental agency representative and 13 individuals with an interest in the project attended.

Comments were taken at the workshop and also after the workshop for a period of 15 days. Seventeen responses were received, including written comments and emails. Comments

received regarding alternatives and environmental concerns are summarized in the following tabulation (Tabulation 4).

**TABULATION 4
SCOPING COMMENTS RELATIVE TO
ALTERNATIVES AND ENVIRONMENTAL CONCERNS
LOST RIVER SUBWATERSHED**

Issues	Number Comments
Consideration of a “no build” alternative	3
Consideration of water supply	8
Demographic assessments	3
Effectiveness of existing dams	7
Land treatment	2
Wetlands	7
Benefit cost analysis	8
Agency consultation	3
Archeology investigations	3
Borrow material sources	1
Recreation alternative	3
Consideration of dredging, channelization, buyouts, etc.	3
Social impact analysis	2
Consideration of moving Site 16 upstream	1
Sediment loads from Lower Cove Run	1
Updated costs for project	1
Wildlife habitat evaluation	3
Stream data	1

When applicable, issues raised at the public scoping meeting were incorporated into the Draft Supplemental Watershed Plan – Draft EIS.

The Draft EIS was distributed by mail on or about August 25, 2006 to the following list of agencies, stakeholder groups and individuals (see distribution list) for the purpose of soliciting comments. A postcard notification, announcing the availability of the Draft EIS, was also sent to agencies, stakeholder groups, tribal representatives and individuals located beyond the

immediate project area that may have an interest in the proposed project. Hard copies of the report were available to those requesting copies and the Draft EIS was posted electronically on the West Virginia NRCS website.

An informational workshop was held at the Baker Fire Hall on September 26, 2006 to provide interested individuals and agencies an opportunity to obtain information regarding the Draft EIS for the proposed Site 16 project. Approximately 26 persons attended the workshop including 11 from the implementing and cooperating agencies and local sponsoring organizations. The remaining attendees were individuals with an interest in the project.

NRCS personnel from multiple disciplines were available at the workshop to entertain questions and discuss matters related to the Draft EIS. Written comments were taken at the workshop and by mail or email. Comments were requested to be received at the NRCS State Office in Morgantown by October 25, 2006.

All of the comment letters, emails and other written comments received from agencies, stakeholder groups and individuals as a result of the review of the Draft EIS are contained in Appendix A. The remainder of this section contains point by point disposition of the comments for which responses were prepared.

Distribution List:

Virginia R. Painter
Deputy Commissioner
WV Dept. of Education & Arts
Division of Culture and History
1900 Kanawha Blvd, East
Charleston, WV 25305-0300

Tom Chapman, Project Leader
U.S. Department of Interior
Fish and Wildlife Service
694 Beverly Pike
Elkins, WV 26241

Mike Cummings
US Army Corps of Engineers
Pittsburgh District
100 Liberty Avenue
Pittsburgh, PA 15222-4186

WVDEP
Stephanie R. Timmermeyer
Cabinet Secretary
601- 57th St.
Charleston, WV 25304

WVDOT
Paul A. Mattox, Jr., P.E.
Commissioner,
Division of Highways
Building 5
1900 Kanawha Blvd, East
Charleston, WV 25305

Curtis Taylor, Chief
WV Dept. of Commerce
Division of Natural Resources
Wildlife Resources Section
Capitol Complex, Bldg 3
Room 812
Charleston, WV 25305

District II
Rich Rogers, Wildlife Management
Jim Hedrick, Fisheries Management
1 Depot Street
Romney, WV 26757

Joe Manchin III, Governor
State of West Virginia
Bldg 5, Room 100
1900 Kanawha Blvd
Charleston, WV 25305-0700

Truman Wolfe, Exec. Director
WV State Conservation Agency
1900 Kanawha Blvd, East
Charleston, WV 25305

Paul Wilson
WV Chapter Sierra Club
P.O. Box 4142
Morgantown, WV 26508

W. Neil Gillies, Director
Cacapon Institute
Route 1, Box 328
High View, WV 26808

Margaret Janes, DVM
Potomac Headwaters
Resource Alliance
5640 Howards Lick Rd.
Mathias, WV 26812

Lyle Bennett
WVDEP
Division of Water and Waste
Management
601 - 57th Street
Charleston, WV 25304

Roger Anderson
WV Dept. of Commerce
Division of Natural Resources
Operations Center, Ward Rd
P.O. Box 67
Elkins, WV 26241

John Forren
Chief, NEPA Compliance Sect
US EPA, Region III
1650 Arch Street, Mc: 3es30
Philadelphia, PA 19103-2029

William Keplinger, Jr. President
Hardy County Courthouse
204 Washington Street
Moorefield, WV 26836

Bryan Moore,
Executive Director
WV Rivers Coalition
801 N. Randolph Avenue
Elkins, WV 26241

David Rider
US EPA, Region Iii
1650 Arch Street
Philadelphia, PA 19103-2029

John Wagoner, Chairman
Potomac Valley Conservation District
500 East Main Street
Romney, WV 26757-1836

Frank Jezioro, Director
WV Dept. of Commerce
Division of Natural Resources
Capitol Complex, Bldg 3, Rm 669
Charleston, WV 25305

Danny Bennett, Wildlife Biologist
WV Dept. of Commerce
Division of Natural Resources
Operations Center, Ward Road
P.O. Box 67
Elkins, WV 26241

Karen Sykes
US Forest Service
180 Canfield Street
Morgantown, WV 26505

Gus Douglas, Commissioner
WV Department of Agriculture
Bldg 1, Rm M28, State Capitol
1900 Kanawha Blvd, East
Charleston, WV 25305-0170

James Smalls
George Washington & Jefferson National
Forests
Lee Ranger District
109 Molineu Road
Edinburg, VA 22824

Maureen Hyzer, Supervisor
George Washington & Jefferson National
Forests
5162 Valleypointe Parkway
Roanoke, VA 24019

Office of Federal Activities – A104
Environmental Protection Agency
401 M Street, SW
Washington, DC 20460
US Dept. of Interior
Secretary of the Interior
US Dept. of Interior
Washington, DC 20240

Director
Office of Environmental Project
Review
US Dept. of Interior
Room 2024
Washington, DC 20240

US Dept. of Commerce
Director, Ecology &
Conservation Office
Dept. of Commerce, NOAA
14th & Constitution Ave., NW
Room 6222
Washington, DC 20230

US Dept. of Housing & Urban
Development
Environmental Officer
Wanamker Bldg.
100 Penn Square, East
Philadelphia, PA 19107

US Dept. of Transportation
Coordinator, Water Resources
US Coast Guard G-MPS1
2100 Second Street, SW
Washington, DC 20590

Director
Office of Advocacy & Enterprise
Room 1345, South Bldg.
Washington, DC 20250

Natural Resources Defense
Council, Inc.
1350 New York Ave., NW
Suite 300
Washington, DC 20005

National Wildlife Federation
1412 16th Street, NW
Washington, DC 20036
Attn: Legislative Rep.

Sierra Club
404 C Street, N
Washington, DC 20002

Potomac Valley Audubon
Society
PO Box 578
Shepherdstown, WV 25443
304-876-1139
Peter Smith, President

Minear & Associates L.C.
100 Capitol St, Suite 703
Charleston, WV 25301

Stephanie & Anthony Slater
406 Gold Dr.
Broadway, VA 22815

Elizabeth Webster
294 Lower Cove Rd.
Mathias, WV 26812

Mike & Allaina Whetzel
P.O. Box 4
Lost City, WV 26810

Patrick & Joem Webster
824 Lower Cove Run Rd.
Mathias, WV 26812

The Walker Residence
2639 SR 259N
Wardensville, WV 26851

Tom Reid
1494 Lower Cove Run Rd.
Mathias, WV 26812

Don Biller
Lost City, WV 26810

Charles Foltz
1036 Lower Cove Rd.
Mathias, WV 26812

Delia Foltz
1038 Lower Cove Rd.
Mathias, WV 26812

Steven Snapp
1162 Lower Cove Run Rd.
Mathias, WV 26812

Mark Tesoriero
Philip Satolli
874 Lower Cove Run
Mathias, WV 26812

Margarite Little
727 Salem St.
Rockton, Illinois 61072

Patsie Polfliet
8485 Necedah Dr
Roscoe, IL 61073

Marilyn and Conrad Christiano
622 Highland Avenue NW
Washington, DC, 20012

Eunice Webster
256 Black Ridge Rd.
Mathias, WV 26812.

Crystal Lake
[mlake1777@earthlink.net]
No mailing address given

Eileen Preston
[ipreston@rochester.rr.com]
No mailing address given

**Individuals listed hereafter will
receive postcard notification
of the availability of the Draft
Plan – EIS:**

Mr. Michell Hicks, Chief
Eastern Band of Cherokee Indians
Qualla Boundary, P.O. Box 455
Cherokee, NC 28719

Renee Hypes, Division of
Natural Heritage
217 Governor Street, 3rd Floor
Richmond, VA 23219

David Burns
490 Deer Haven
Wardensville, WV 26851

Thomas Cave
100 Manitou Court
Winchester, VA 22603

Steve Dorick
1844 Clovermeadow Dr.
Vienna, VA 22182

Michael E. Dunn
21370 Ashburn Run Place
Ashburn, VA 20147

Bill Fawcett
8645 Koantz Corner Road
Harrisonburg, VA 22802

Dan Hudson
11430 Rosedale Lane
Beltsville, Md 20705

Mr. Russell Townsend
Tribal Historic
Eastern Band of Cherokee Indians
P.O. Box 455
Cherokee, NC 28719

Steven Krichbaum
412 Carter St.
Staunton, VA 24401

Mr. James E. Loesel, Secretary
Citizens Task Force
2428 Guilford Avenue
Roanoke, VA 24015

Dana Mccarron
6402 Northwoods Hollow
Fulks Run, VA 22830

Matthew Mackay-Smith
Old Dominion Endurance Ride
1038 Carters Line Rd
White Post, VA 22663

Bruce Saunders
2520 Fairlawn Road
Durham, Nc 27705

Shenandoah Trail Riders
792 Boliver Road
Fort Valley, VA 22652

Emma T. Suarez, Esq.
Pacific Legal Foundation
3900 Lennane Drive
Suite 200
Sacramento, Ca 95834

Tammy L. Belinsky
9544 Pine Forest Road
Copper Hill, VA 24079

Robert Whitescarver
84 Hewitt Rd.
Swoope, VA 24479-2208

Dr. Hal Young, Jr.
3816 Vinyard Road
Barboursville, VA 22923

Elizabeth Schelin
Nvtr
1467 Dismal Hollow
Front Royal, VA 22630

Marjorie Fleshman
2703 Dorchester Dr., NW
Roanoke, VA 24012

Ray Ritchie
252 High Street
Timberville, VA 22853

Sarah Francisco
Southern Environmental
Law Center
201 W. Main St.,
Suite 14
Charlottesville, VA 22902

Alan Cabbage
Page County Supervisor
117 South Court Street
Luray, VA 22835

Shenandoah Mountain Bike Club
Thomas Jenkins
375 East Wolfe Street
Harrisonburg, VA 22802

Mr. Floyd Reynolds
329 Miller Road
Edinburg, VA 22824

Appalachian Forest Mgmt Group
C/O Tim Goodbar
6800 Rich Patch Road
Covington, VA 24426

Roger Blalock
466, County Road 349
Logan, Alabama 35098

Larry E. Camp
6320 Musket Ball Dr.
Centreville, VA 22020

U.S. Forest Service
Deerfield Ranger District
148 Parkersburg Tpke
Staunton, VA 24401

Alvin Dove
VA Wildflower Preserv.
P.O. Box 785
Harrisonburg, VA 22801

Alvin Estep
Western VA Deer Hunters
15468 Rosebud Lane
Fulks Run, VA 22830

Kenneth Cenger, President
2267 Boliver Rd.
Fort Valley, VA 22652

U.S. Forest Service
James River Ranger District
810-A Madison Avenue
Covington, VA 24426

Jim Keyser
2064 Sulphur Springs Rd
Middletown, VA
22645-3610

Dick Hall
WVDNR
Box 67
Elkins, WV 26241

Sandra P. Long
7546 Smith Creek Road
New Market, VA 22844

John Lawson
President & CEO
Assoc. Public TV Stations
666 Eleventh St, NW, Suite 1100
Washington, DC 20001
Molly Grunmeier
610 Old Fort Road
Winchester, VA 22601

Jim Bensman
Heartwood Forest Watch
585 Grove Ave.
Wood River, IL 62095-1615

Southern Appalachian Forest
Coalition, Mark Shelley
46 Haywood St., Suite 323
Asheville, NC 28801-2838

Todd Crowder
P.O. Box 452
Edinburg, VA 22824

David Kocka
P.O. Box 996
Verona, VA 24482

Wild Virginia
P.O. Box 1065
Charlottesville, VA 22902-1065

Mark Zettler
8316 Tobin Road, Unit #12
Annandale, VA 22003-6835

Patrick Sheering
246 Hope Lane
Toms Brook, VA 22660

Ms. Janine Blaeloch
Western Land Exchange
Project
P.O. Box 95545
Seattle, WA 98145

Mr. Mark Donham
Ms. Kristi Hanson
Race/Heartwood
Rr #1 Box 308
Brookport, IL 62910

Ben Prater
Southern Appalachian
Biodiversity Project
191 Merrimon Ave.
Asheville, NC 28801

Valerie Kanavy
874 Burner Lane
Fort Valley, VA 22652

Michael Hollar
108 S. Whissen Street
Edinburg, VA 22824

Mr. Peter Shoenfeld
713 Chesapeake Ave.
Silver Spring, MD 20910

Brent Long
902 Woods Chapel Road
New Market, VA 22824

Rich Edwards
222 Campbell St.
Harrisonburg, VA 22801

Ed Bachmann
700 Bolinwood Dr.
Apt. 12c
Chapel Hill, NC 27514

Chris Boucher
115 Clover Drive
Chesapeake, VA 23320

John Rice
203 N. Leigh Creek Road
Tetonia, ID 83452

Mark Deren
Seven Fountains Rd.
Fort Valley, VA 22652

U.S. Forest Service
Dry River Ranger District
401 Oakwood Drive
Harrisonburg, VA 22801

Sarah Faulconer
337 Thompson Street
Strasburg, VA 22657

Tom Hawkins
P.O. Box 601
Dayton, VA 22821

Mr. Michael Kaizar
933 Norfolk St.
Pittsburgh, PA 15217-2855

U.S. Fish & Wildlife Service
Virginia Field Office
6669 Short Lane
Gloucester, VA 23061
Attn: Karen Mayne

Ms. Edith Levine
3731 Kanawha St., NW
Washington, DC 20015

Sherman Bamford
PO Box 3102
Roanoke, VA 24015-1102

Michael & Lisa Ielmini
Box 37
Mathias, WV 26812

Christine Wulf
622 Bolling Ave.
Charlottesville, VA 22902

William E. Schmidt
8525 Bradford Rd
Silver Spring, MD 20901

Ms. Louis Strickler
3877 Winding Way Rd., Sw
Roanoke, VA 24015

Dean Miller
14692 Senedo Rd
Edinburg, VA 22824

U.S. Forest Service
Warm Springs Ranger District
Route 1 Box 30
Hot Springs, VA 24445

Janet Tinkham
360 Kings Drive
Fort Valley, VA 22652

Mr. Russell J. Murphy
213 Chancellor Drive
Virginia Beach, VA 23452

Hugh Irwin, Southern
Appalachian Forest Coalition
46 Haywood St., Suite 323
Asheville, NC 28801-2838

Dan Radke
264 Riffey Mtn. Lane
Mathias, WV 26812

Dave Muhly
Rt 2 Box 118
Bland, VA 24315

Mary Ann Wates
936 Gun Barrel Road
White Post, VA 22663

Harold Draper
TVA NEPA Administration
400 West Summit Hill Dr., Wt 8c-K
Knoxville, TN 37902-1499

Mr. Bruce Saunders
2520 Fairlawn Road
Durham, NC 27705

Mr. Jim Tomlin
19625 Charline Manor Road
Olney, Md 20832

Mike Kruse
1420 Early St.
Charlottesville, VA 22902

Responses to Lost River Comments

Portions of the letters that require a response are reproduced here. Letters in their entirety are included in this FEIS in Appendix A.

Hardy County Public Service District letter dated October 11, 2006

Comments noted, no response required.

County Commissioner Correspondence dated October 25, 2006

Comments noted, no response required.

County Commission Correspondence dated October 3, 2006

Comments noted, no response required.

Potomac Valley Conservation District letter dated October 20, 2006

Comments noted, no response required.

Hardy County Rural Development Authority letter dated October 19, 2006

Comments noted, no response required.

United States Environmental Protection Agency letter dated October 24, 2006

Comment: "The stated need for the project is to address flood control and rural water supply. EPA requests that problems associated with flooding be presented specifically for the area that will be protected by the Lower Cove Run Site 16 dam. The position could be substantiated if the yearly cost for flood damage repair for the area protected by Site 16 (12 square mile area?) was tabulated over the past two decades. The table should break down the flood event by year, number of buildings suffering damage and value of losses (with references to the source of the data). The number of homes and businesses where flood damage would be alleviated should be identified.

Table 5 attempts to estimate annual cost of flood damage, but it is unclear what portion of the Lost River Subwatershed is considered and how the costs were derived."

Response: The flood damage reduction benefits cited in this supplement are a result of the combined effects of Sites 4, 10, 16, and 27 and the land treatment measures. All four structures work together to provide the level of protection and reduction in flood damages described in this report and displayed in the tables. Flood damages are based on an average of all the floods, up to a magnitude of a 500 year flood (an event that has a statistical chance of occurring .2% in any given year). The benchmark for NRCS floods is a 1% flood, or 100 year event. The methods used for determining damages are outlined in the references cited in the report. For a

comprehensive picture of the flooding in the Lost River Valley, the original Work Plan and the subsequent supplements as well as this FEIS should be consulted. The average annual damages represent the range of flood damages that occur from very small floods to very large floods on the tributaries and the main stem of Lost River. In some years, the area may experience no flooding while in other years, the area may experience several large floods. To better clarify need and methodology, information has been added to the “Need for Supplement” portion and to the “Investigation and Analysis” section of the FEIS.

Comment: “It is not clear in the document that water quality degradation is a problem in the area that will be protected by the Site 16 dam. Current water quality should be specified and tabulated in the document, and compared to State and national standards, to identify parameters of concern. It would be relevant to show historic water quality, and the improvement achieved by the operation of the new dams that were constructed in the watershed over the last decades (Sites 4, 10, 27). This would be helpful to support that a problem still exists, and to support the efficiency of the type of design proposed to address the parameters of concern.”

Response: Additional water quality data has been added to Appendix D. Also, The Water Quality effects section in the FEIS has been further clarified.

Comment: “It is a concern that the basis of the Site No. 16 is founded on, and relies almost exclusively upon, the study of alternatives performed more than 30 years ago. The Alternatives analysis presented in the Site 16 DEIS refers the reader to the October 1974 report. As such, the alternatives could not have evaluated more recently developed Best Management Practices (BMPs) for stream bank restoration, riparian planting, wetland restoration along floodplains, restoration and preservation of floodplain areas, and storm water and agricultural runoff management. Other options not evaluated in detail in the 1974 document include dry dams, or moving the most flood prone structures away from the floodplain. It would be relevant to a discussion of flood control in a sparsely populated area to evaluate such alternate methods.”

Response: Additional information has been added to the “Alternatives Considered” portion of the FEIS.

Comment: “Though the projection of water temperature change was presented in the original document to range from increases between 5 and 10 degrees F, the current DEIS suggests that temperature of the coldwater stream will not be significantly modified because of construction of a coldwater release in the spillway. It is our understanding that cold water release structures have been built at other dams to maintain flow and thermal regime. It would be appropriate to include the data, or to collect data, to substantiate the claim that downstream temperature will not be impacted by the dam.”

Response: Additional information has been added to the discussion of Water Quality effects regarding water temperature and dissolved oxygen at various depths in existing Lost River impoundments. Temperature and DO data collected at Kimsey Run and Parker Hollow are contained in Appendix D.

Comment: *“An Environmental Impact Statement prepared to satisfy requirements of NEPA needs a section to evaluate the secondary impacts of the proposed action, and cumulative effects, which include any impacts of any development related or unrelated to the action which will impact any of the resources affected by the proposed action. Secondary impacts could include residential or commercial development associated with the proposed water supply system, thermal changes in the stream, fish passage issues, flow conditions during low flow, invasive species. Cumulative impact could include foreseeable effects of construction of Corridor H, or other projects in the subwatershed, on surface and ground water, aquatic or terrestrial habitat, etc.*

The summary of impacts for Tabulation 2 (page 20) appears to misstate acres of permanent inundation.”

Response: Concur. “Cumulative Effects” have been added to the FEIS. Acres of permanent inundation in Tabulation 2 have been further clarified.

Comment: *“It is unclear why the document contends (page 52, tabulation 3) that public support or opposition to the project is outside the scope of the comment process.”*

Response: The FEIS has been corrected.

Comment: *“Potential mitigation plans should be incorporated into the EIS. Mitigation can include the requirements under Section 404, but also what can be done under NEPA to replace impacted resources, reforest, maintain low temperatures in the trout waters, restore or enhance habitat, etc.”*

Response: A “Mitigation Summary” has been added to the FEIS.

West Virginia Division of Natural Resources letter dated October 25, 2006

Comment: *“We wish to bring your attention to several statements that we believe are not supported by data. An example is the assertion that trapping of sediment behind the dam is a positive result. To justify this statement, data would need to be presented that excessive sediment is entering the upper reaches of Lower Cove Run. Given the fact that the watershed above the dam is largely forested, it is doubtful that the upper watershed is producing excessive sediment.*

Response: We agree that the upper portion of Lower Cove Run is largely forested. However there continues to be significant residential development occurring in the watershed. Site disturbance associated with home construction and development access roads, farm roads and streambank erosion result in significantly increased sedimentation compared to undisturbed forestland. There are also areas on Lower Cove Run between the National Forest property and the proposed dam site that are severely eroding and contributing large amounts of sediment to the lower reaches of Lower Cove Run. Much of the sediment from these sources would be trapped by the proposed impoundment.”

Comment: *“In addition, the trapping of natural sediment loads behind a dam can be detrimental to channel stability downstream of the impoundment. The phenomenon is referred to as “hungry water.” Flowing water has the capability to transport naturally occurring sediment loads very efficiently so that the net result is a stable channel that is neither aggrading from inefficient sediment transport or degrading. If naturally occurring sediment loads are eliminated, flowing water will remove sediment from the bed and banks down stream of the impoundment. If the channel degrades significantly, it may also become laterally unstable. Grade control and velocity dissipation devices can be constructed below the impoundment to minimize this potential adverse impact.”*

Response: Agreed. The discussion of sediment has been clarified. Grade control and energy dissipation below the outlet of the structure has been included as a measure to minimize the possible effects of discharging sediment-free water from the impoundment.

Comment: *“Another example is the assertion that the project will result in improved water quality. The document does not offer data as to the water quality issues in the watershed. The West Virginia Department of Environmental Protection 303(d) program lists the Lost River as impaired due to fecal coliform contamination. We found no evidence that the water supply/flood control project will affect systematic fecal coliform problems. The document does not offer data showing how the reduction in occasional flooding will significantly reduced problems with fecal coliform in a watershed.”*

Response: Additional narrative pertaining to fecal coliform in the Lost River has been added to the Water Quality section. The TMDL developed for Lost River recommends that fecal coliform loads be reduced from pastureland, forestland and cropland. The proposed project would remove an estimated twenty head of livestock from fields adjacent to Lower Cove Run. This reduction contributes to the reduction in fecal coliform loading. In addition, the reduced flood frequencies and magnitudes upon Lost River floodplains used for agriculture will reduce amounts of manure residue and chemical fertilizers that might be transported to the Lost River by flood waters. Since the amounts of nutrients and fecal coliform introduced to the lost River as a result of flooding could not be quantified, no monetary benefits for this effect have been claimed.

Comment: *“The DNR’s primary concern with the revised Dam Site 16 proposal is the removal of recreation as a primary project purpose and diminishing its importance to an “incidental” status. The sponsors assert, without supporting information, that recent improvements to recreation facilities in the area have eliminated the need for recreational facilities on Dam Site 16. With dramatic growth in the area and the projected increase in growth that the project is anticipated to promote, current recreational facilities may not be as adequate as the sponsors assert. The DNR will not oppose the reduction of recreational facilities (i.e. picnic areas and pavilions) on Dam Site 16; however, we are adamantly opposed to “recreation” being classified as an incidental project purpose.”*

Response: In the original plan-EIS prepared in 1974, Site 16 was designated as the only site where recreational facilities and fishing would be provided. Recreational development and fishing were not originally proposed at any of the other four proposed impoundments. Since then, the three completed sites in the Lost River Subwatershed project all have included

incidental fishing and public access components. At the request of project sponsors, developed recreational amenities, including the campground, picnic areas, picnic shelters, system of access roads and parking areas, playground, swimming beach, sanitary facilities and waste water treatment were removed from the Site 16 project proposal. As such, project implementation costs associated with acquiring additional land and constructing these facilities were eliminated. Therefore, recreation was removed as a project purpose. Project costs associated with including incidental fishing recreation are small compared to the developed recreation originally proposed. The removal of recreation as a primary purpose of this project in no way diminishes the importance of fishing as a project benefit.

Comment: "According to the economic data in the DEIS, recreation (specifically fishing) will annually produce \$872,900 of economic benefit to the region. Flood reduction is reported to annually produce \$584,500. Recreation produces 30 percent of the economic benefit of the project compared to only 20 percent for flood reduction. It is difficult for us to understand how the sponsors can consider 30 percent of the project's economic benefit as "incidental" while flood control, which produces significantly less economic benefit, is still considered a "primary" project purpose."

Response: See response to previous comment.

Comment: "The removal of fishing recreation as a project purpose could allow eliminating public access to the facility with little or no public involvement in the decision. The DNR is planning to commit substantial resources to establish a warmwater fishery in the impoundment. If the project is approved with recreation only considered as an "incidental" benefit, we will reconsider this commitment. Without recreation as a project purpose, we cannot be assured that public fishing will be allowed for the life of the project. Consequently, without the economic benefit of fishing recreation, the project will not meet the required minimum 1:1 benefit to cost."

Response: The NRCS agrees that the loss of incidental fishing would reduce the project benefits and may, in turn, reduce the benefit cost ratio. WVDNR's commitment of resources to establish and maintain fisheries in NRCS constructed impoundments is of great value. Public access and the use of the Site 16 impoundment as a fishery will be insured through the interagency project agreement similar to those existing for Sites 27, 4, and 10.

Comment: "Although the DNR, as stated previously, does not oppose the substantial reduction of non-fishing recreational facilities on the project, the project design must include certain characteristics that will facilitate the projected angler days. These include a boat ramp, parking areas and reasonable access to shoreline. These features should be maintained by the Project sponsors."

Response: NRCS will coordinate with Project Sponsors, including WVDNR, during the design and construction phases to ensure that these features are included.

Comment: "The DEIS did not include any details concerning wetland and stream compensatory mitigation. We will work closely with the Natural Resources Conservation Service and local

sponsors to aid in the determination of appropriate type and location of compensatory mitigation projects for unavoidable impacts.”

Response: A mitigation summary section has been added to address compensatory mitigation. NRCS will work closely with WVDNR and USFWS to develop mitigation plans to address unavoidable wetland and stream impacts.

United States Department of Interior letter of October 18, 2006

Comment: “The Plan-DEIS does not fully describe impacts the dam will have at the impoundment site and on downstream flow. Information on the following should be provided: magnitude and timing of current and anticipated with-project future streamflow in the reach below the proposed dam site, proposed operating schedule of the dam, and commitments made by the proponents about minimum flow, by season, if appropriate.”

Response: Flow downstream of the dam during normal operation will equal inflow upstream of the normal pool. Flow downstream of the dam during runoff events will be less than inflow to the pool. The extent of the difference from inflow and outflow will be contingent upon the magnitude of the storm event. Pre-project and with project stream flows and water surface elevations are displayed in Appendix C. The primary discharges from the dam will be through a self-regulating intake riser which will be designed to restrict the flows to an allowable amount and will not have an operating schedule.

Comment: “We note that the Plan-DEIS supplements a Final Environmental Impact Statement (FEIS) written in 1974. The 1974 FEIS described total flow below the proposed dam location as approximately equal to inflow to the impoundment, with the difference equal to loss by evaporation. The original document also stated that flood flows would be stored in flood pools and released with no significant change in volume within 2 to 6 days following the storm (page 7). It is particularly appropriate to revisit the streamflow information because the original document was written 32 years ago and the original purpose of the dam (and potentially its operating and release schedule) has been modified.”

Response: The nature of the proposed structure has remained the same, with the exception of the riser configuration. The original work plan indicated a two stage riser would be installed; however, this document indicates that a single stage riser would be installed. This change in configuration will not change the operation of the structure during normal flow periods. That being the case, the release rates during flood flows will remain relatively the same. The flood waters will be stored behind the dam and released through the principal spillway up until the 100-year runoff event. If the runoff event exceeds the 100-year event, then the flood waters will begin to exit out of the auxiliary spillway in addition to the principal spillway. During normal flows the inflow into the lake will match the discharge through the principal spillway.

The retarding pool will be emptied in 10 days or less. The primary discharges from the dam will be through self-regulating intake riser which will be designed to restrict the flows to an allowable amount and will not have an operating schedule.

Department of the Army, Corps of Engineers letter of October 18, 2006

Comment: *“The Pittsburgh District has the following comments on the DEIS:*

- 1. An individual Department of the Army permit is required for this work*
- 2. A detailed Alternatives Analysis and Avoidance and Minimization narrative commensurate with the impacts to wetlands and other Waters of the United States will be required with your application. The Alternatives Analysis in the DEIS does not meet 404(b)(1) guidelines*
- 3. Direct and Indirect, temporary and permanent downstream impacts must also be considered in your impact calculations.*
- 4. Water delivery structures may also require permitting from this office if they impact wetlands or other Waters of the United States.*
- 5. The Pittsburgh District cautions the project proponent from finalizing design plans and issuing the Final EIS prior to receipt of a Section 404 Clean Water Act Permit as the design may be altered during the application review process.”*

Response: It is NRCS procedure to complete the planning process and produce a Final EIS before applying for a project permit. NRCS acknowledges that permits are required prior to the implementation of the proposed project. Comments 2 through 5 will be addressed during the permitting process.

West Virginia Division of Culture and History Letter of October 2, 2006

Acknowledged, letter superseded by letter of December 6, 2006.

West Virginia Division of Culture and History Letter of December 6, 2006

Acknowledged, letter replaces letter from October 2, 2006.

Emails and letters received from the general public are included in their entirety in this FEIS. Opinions of the writers are acknowledged and, where necessary, a response is provided. Comments were not corrected for grammar or clarity.

Joem Webster email of 10/17/06 10:37 am – Comments noted

Joem Webster email of 10/17/06 10:35 am – Comments noted

Dick Baker email of 10/17/06 10:55 am – Comments noted

Anne Webster email of 10/17/06 9:12 am – Comments noted

Wendy Lane email of 10/18/07 9:57 am – Comments noted

Roger Weidman email of 10/18/06 9:55 am – Comments noted

Valincia Darby email of 10/18/06 4:00 pm – see response to DOI letter

Response to Anthony Slater's email of 10/19/06 8:58 am

Comment: *"Since 1974, the Committee has tried to get the local and elected officials along with cooperating agencies to re-evaluate the 1974 Work Plan for the Lost River Watershed....It is not common practice for any public sector to allow a project or work plan to continue without being updated, reviewed, or checked for feasibility without current studies and alternatives."*

Response: The Lost River Work Plan – Environmental Impact Statement has been supplemented three times (1989, 1991, and 2001) with each supplement consisting of updated costs and benefits, and environmental impacts. Net Benefits of the project have increased since Supplement #3 as a result of decreased costs in the overall project, increased water supply benefits, and a more favorable project interest rate. Changes in the project have resulted in the benefit cost ratio increasing from .80 to 1.0 in Supplement #3 to 1.13 to 1.0 in this Supplement.

Bradley Walker email of 10/19/06 12:29 am – Comments noted

Anthony Slater email of 10/19/06 8:27 am – duplicate of 10/19/06 8:58 email

Response to Elizabeth Webster's email of 10/20/06 1:49 pm

Comment: *"Where is the need for additional dams on Lost River?"*

Response: The need is described in the 2007 FEIS.

Comment: *"Exactly what flood damages would the Lost River Site #16 prevent?"*

Response: Flood damages to property and improvements are reduced by an additional \$126,900 annually as indicated in Tabulation 2.

Comment: *"How is Site 16 at Lost City on Lower Cove Run, a tributary of Lost River, going to protect the town of Mathias?"*

Response: This Supplement does not state that Site 16 will protect the town of Mathias or any other town upstream of Site 16 along Lost River. The supplement does address Site 16 in concert with the other structures in the Lost River work plan.

Comment: *"Where is the data that can be verified to substantiate the NRCS' claim that the Lost River has \$1 million in flood damages annually? Which years had these damages and where did these damages occur? Please identify buildings, etc. by location that were affected by those floods. Also, identify which of these are above or below existing dams. Distinguish those structures that will be protected by Lost City Site 16."*

Response: See response to EPA letter dated 10/24/06.

Comment: *“Where is the before and after analysis so that a comparison can be made as to the benefit from those dams that have already been constructed?”*

Response: The analysis is displayed in Tabulation 2, Columns 2 and 3

Comment: *“Where does the draft EIS show how much benefit (if any) Kimsey Run has done to lessen flood damages?”*

Response: The effects of Kimsey Run are included in Existing Conditions.

Comment: *“Why are the benefits in the draft EIS calculated for 100 years? Most dams have a life of 50 years.”*

Response: The National Engineering Handbook Section 3 Chapter 8 states the design life of a reservoir is the period required for the reservoir to fulfill its intended purpose. Structures designed by SCS (now NRCS) in the watershed protection and flood prevention programs are usually designed for a life of 50 or 100 years. The SCS-309 form “Reservoir Sediment Design Summary” documents that Site 16 has enough capacity for a 100 year design period. Additionally, footnote to Table 3 of the FEIS states that all Lost River sites store 100 years of submerged sediment accumulation. The benefits and costs are calculated for 100 years because that is the period of time over which these structures are expected to function.

Comment: *“What percentage of the practices to reduce erosion, etc. as written in the 1974 EIS have the NRCS completed? Which have never been addressed? Of those completed which has had the greatest impact on the Lost River? What was the cost of each? What was the financial benefit of each in terms of minimizing water damages to soil and buildings?”*

Response: Refer to Table 1 in the FEIS. As referenced in the 1974 Lost River Subwatershed Work Plan, PL-534 authorized funding for accelerated land treatment as a component of watershed protection within the Lost River Subwatershed, resulting in increased NRCS staffing levels to provide technical assistance to private landowners in the watershed. This assistance has been provided to landowners who became cooperators with the Potomac Valley Conservation District and prepared resource conservation plans to install identified practices. Funding for practice implementation has been provided through various USDA cost-sharing programs.

Total acres of agricultural lands treated to date exceed those identified for treatment in the 1974 Work Plan. Practices installed include, but are not limited to, conservation cropping systems, cover crops, grassed waterways, animal waste storage systems, comprehensive nutrient management, improved pasture management, critical area treatment, fencing, livestock water development (ponds, spring developments, pipelines, troughs), riparian forest buffers, streambank stabilization, and livestock exclusion from forestland and riparian areas.

The application of these conservation measures has improved land cover and hydrologic conditions, resulting in reduced runoff, erosion, and sedimentation from treated areas. The applied conservation practices have also helped limit water quality degradation in the watershed

by reducing nutrient and fecal coliform loading from agricultural sources. Quantitative benefit/cost analysis for individual conservation practices has not been done.

Comment: *“What is the cost of drilling wells for water rather than building another dam at an estimated cost of \$24 million dollars? Where is the comparison of costs for getting water from the river or wells vs impoundments? How can you justify this dam for water supply for such a sparsely populated area?”*

Response: As indicated in the Hardy County Water Resources Study, wells and surface streams are not viable options for public water supply. The report is located at http://www.wv.nrcs.usda.gov/programs/watershed/lost/lost_river.html. This document was made available to the public in 2004. Justification for the water supply is included in Appendix E of the FEIS.

Comment: *“Will my emails to you sent on August 8, 2006, be part of the comments section on the final draft? Should I resubmit those to you for inclusion?”*

Response: The comment period for the DEIS was August 25 to October 25, 2006. All comments and questions received during the comment period on the DEIS are included in Final EIS. There was no draft EIS available at the scoping meeting because a draft cannot be produced until **after** the scoping meeting occurs. Comments received during the scoping process have already been addressed in the DEIS.

Ashley Barricks email of 10/20/06 3:25 pm - Comments noted

Response to Elizabeth Webster’s email of 10/20/06 3:58 pm

Comment: *“Please explain how water can be piped from the Lost River area to Wardensville, but the terrain is too steep for water to be piped from Wardensville to Lost River.”*

Response: The FEIS has been corrected.

Comment: *“Isn’t Site 10 adequate for these needs?... Wouldn’t spending approx. \$9 million to use it as a water supply make more sense that [sic] to spend \$24 million and take additional homes and farms?... Have you considered the feasibility of using some everflowing springs as a water source.”*

Response: Lost River Site 10 was constructed to provide flood control and raw water supply source for the Lost River watershed area. There are plans to construct a water treatment plant, water storage facilities, and water transmission lines in the area to provide finished water to local users. The available water at Lost River Site 10 will be adequate to meet the needs of the area over the short term; however, projected needs in the future will exceed the design capacity of Lost River Site 10. Therefore, the sponsors have requested that a water supply component be included with the flood control purpose of Lost River Site 16.

The project sponsors have identified flood control and water supply as purposes for the Lost River watershed project. Lost River Site 16 is identified as providing both of the purposes. In order to provide additional raw water supply to the area, Lost River Site 4 could be modified to include water supply or Lost River Site 16 could be constructed to include water supply. The cost to modify Lost River Site 4 to include water supply is estimated to be approximately \$9 million. The cost to include water supply in Lost River Site 16 is estimated to be approximately \$2 million. Therefore the cost to include water supply in Lost River Site 16 is significantly less than the cost to modify Lost River Site 4 to include water supply.

The total cost of Lost River Site 16 is greater than the cost to modify Lost River Site 4 to include water supply; however, the benefits resulting from the two actions are not the same. Modifying Lost River Site 4 to include water supply and not constructing Lost River Site 16 will not provide additional flood control to the watershed and will not meet the Sponsors' current need for flood control. Thus, a direct comparison of the overall cost of Lost River Site 16 to the cost of modification to Lost River Site 4 does not compare the costs for the same net results.

The feasibility of using springs for public water supply was evaluated in the Hardy County Water Resources report and ruled out due to insufficient yield. The report is available at http://www.wv.nrcs.usda.gov/programs/watershed/lost/lost_river.html.

Comment: "... the cost of piping water throughout the entire Lost River Valley is going to be so costly that people may refuse to use public water. Has a study been done to determine if the people who live in the area will pay for water from a public water supply? What is the population requirement to make public water less costly than private wells?"

Response: The Hardy County Public Service District and Hardy County Commission will be responsible for the construction of water treatment plants and distribution systems in the Lost River Valley. The development of public water supply systems is regulated by the WV Public Service Commission. Customer rates and facilities financing are among the many issues that the WVPSC oversees, ensuring that systems are developed that meet the needs and are affordable to customers.

Comment: "Did the writers of this document seriously consider the "No Build, No Action Alternative?"

Response: Yes.

Comment: "Please identify specifically what building and home will be protected by Dam 16... Have you accounted for the damages caused by Howard's Lick, or Fravel's Run, or Mill Gap Run, or the numerous unnamed streams that drain into the Lost River?"

Response: Refer to the "With Project 100 Year Floodplain" maps included in the FEIS Appendix B. Homes, roads, farm buildings, cropland, and all other types of property are shown on the maps. Additional information regarding flood damage calculations has been added to the Investigation and Analysis section of the FEIS. All drainages in the Lost River Watershed are included in the hydrologic and hydraulic study of the watershed.

Comment: *“On page 22, the draft EYES [sic] you state that “55 square miles of drainage area will be controlled”. You contradict that amount on 23 by stating “Site 16 will trap sediment from the 11.8 square miles of drainage area behind this structure.” Why [sic] the huge discrepancy? Why didn’t you translate that amount to a percentage. Isn’t that 8%?”*

Response: The drainage area of Site 16 is 11.8 square miles. The combined drainage area of Site 16 and the structures already completed total 55 square miles. The numbers presented in the paragraph are correct. The drainage area of the watershed is 183 square miles. Site 16 would control 6.4% of the total watershed; however, the total project would control 30% of the total watershed.

Comment: *“Do you have studies to show how much flooding has increased in the past 30 years? the past 10 years? Can you justify that statement with fact based on actual studies?”*

Response: See response to EPA letter of 10/24/07. Changes in watershed conditions, including runoff, floodplain development, bridge modifications, highway construction, and other factors that effect the flooding, were evaluated as part of this Supplemental Work Plan. Mapping, aerial photography, property elevations, stream cross-sections, and all other information needed to assess the current state of flooding were updated as part of this Supplemental Work Plan – FEIS.

Comment: *“Has the water quality of Lower Cove Run been tested periodically. Have these results been published? Has a study been done to determine the possible vegetative impact to the main stream of the Lost River if the water from Lower Cove Run water is deleted from its flow?”*

Response: Water quality samples have been analyzed on Lower Cove Run for a number of years (See data in Appendix D). Most of the time, water will be discharged from the Site 16 outlet structure as a result of water entering the impoundment from upstream. In the event that withdrawals for water supply needs exceed inflow into the impoundment, discharges from Lower Cove Run to the Lost River may be reduced. The cold water release should supplement the discharge from the impoundment and minimize this occurrence. No adverse impacts to vegetation along Lost River is expected.

Mary McGregor email of 10/20/06 5:05 pm – Comments noted

Mary McGregor email of 10/21/06 2:46 am – Comments noted

Marilyn Christiano email of 10/21/06 11:49 am – Comments noted

Cheryl Detamore email of 10/21/06 12:11 pm – Comments noted

Eunice Webster email of 10/22/06 6:00 pm – Comments noted

Roger Simmer email of 10/22/06 6:50 pm – Comments noted

Cheryl Edwards email of 10/22/06 8:25 pm – Comments noted

Connie Wood email of 10/22/06 9:44 pm – Comments noted

Connie Wood email of 10/22/06 9:44 pm – duplicate; Comments noted

Connie Wood email of 10/22/06 9:44 pm – duplicate; Comments noted

Heather Christiano email of 10/23/06 9:48 am – Comments noted

Response to Elizabeth Webster’s email of 10/23/06 4:00 pm

Comment: *“Construction versus modification of existing site? Did you seriously consider using the dam at Kimsey Run as it has been constructed as a water source? On page 15, it states “The cost associated with modifications to Site 4 would be approx. \$9,500,000. This alternative is not the most cost-effective.” You would spend \$24,000,000 to construct a new dam at Site 16, Lost City. Since when is 24 million less than 9.5 million?”*

Response: See response to E. Webster email of 10/20/06.

Comment: *“What is the basis for your statement on page 17 that states “The lack of dependable water supply will also result in higher fire insurance premiums for homeowners and businesses due to insufficient fire protection. Have you obtained data from the insurance companies to support this claim? Can they not use water from the 3 dams already constructed? Additionally, the PVSCD has helped with the installation of a number of dry hydrants in the Lost River Valley. Do the dams and dry hydrants no [sic] give an adequate supply of water for fire protection?”*

Response: There is tremendous housing growth in the Lost River area, as discussed in Appendix E. While dry hydrants and existing dams can be accessed by fire trucks for water supply and do offer benefits to property owners, these water sources are not as effective as strategically-placed, pressurized fire hydrants that offer a reliable supply of water during fire emergencies. With adequate source water development at Sites 10 and 16, the Hardy County PSD will be able to offer a dependable water supply. The following internet sources support the statements on page 17 regarding the beneficial effects of a dependable water supply relative to fire protection. It should be noted that no monetary benefits were included in Table 6 for the reduction in fire insurance rates.

<http://www.answers.com/topic/fire-hydrant>

<http://ohioline.osu.edu/aex-fact/0424.html>

Comment: *“...it states that “agricultural productivity along the Lost River has been improved with the installation of 3 dams and the land treatment program. Please describe what changes have occurred and specifically where they occurred. I have lived in Lost City since 1972 and have not noticed any dramatic changes to the way the land is used in the Lost River floodplain. The new home [sic] that have been built are on or along the ridges and up the hollows. These new homes do not need protection from the ravaging Lost River.”*

Response: Agricultural productivity is improved due to the reduction in flooding to fences and crop fields in the floodplain. The frequency of flooding has been reduced on floodplain farmlands, resulting in less damage and more dependable yields. Additional information was added to the FEIS regarding this topic. For specific locations, consult the maps in Appendix B. See statements in the *Affected Environment* section of the document regarding floodplain land use. Additional information was added to the *Land Use and Upland Habitat* effects portion of the FEIS to further clarify. We also concur that most new home construction has occurred outside of the Lost River floodplain and therefore, is not subject to flooding and is not included in the flood damage reduction benefits in Table 5.

Comment: *“It further states 416 acres of private land was converted to public uses. Please identify where this conversion has taken place. What public use was realized and is this really an improvement or not?”*

Response: That conversion occurred when land was purchased for Sites 4, 10, and 27. The public use is flood control, watershed protection, water supply, incidental recreation, and other intangible benefits associated with these sites.

Comment: *“On page 42, it states “the implementation of 3 flood prevention structures has reduced the stress and mental anguish associated with the flooding in the watershed. Do you have sworn statements from people who will testify to this claim? What about those who would be impacted if one of these structures were breached or if the rainfall exceeded the holding capacity and the dam overflowed? Did you do a before and after survey to see if people really felt safer before or after construction? What about the mental anguish and stress on the people that opposed these dams?... What about the mental anguish of those who might lose their homes or farms to these projects? ... Did the proponents of these dams consider the wishes of these people? Did you consider the mental anguish and stress of those who do not believe your propaganda and who do not think this project has merit?”*

Response: The FEIS has been corrected.

Response to Elizabeth Webster’s email of 10/23/06 4:49 pm

Comment: *“... It states that it was prepared by Potomac Valley Conservation District, Hardy County Commission and the West Virginia State Conservation Committee. Who specifically from these groups contributed to this document? Please include a list of specific individuals who have helped on the actual writing... How many of the individuals who worked on this draft have intimate knowledge of the Lost River Valley related to flooding during the past 30 years?”*

Response: The list of preparers is included in the document.

Comment: *“There is no data related to actual flood damages in the past 30 years...What specific years where [sic] there floods and which specific years were there drought conditions?...How do you arrive at an average annual flood damage figure in excess of a million dollars?”*

Response: See response to EPA letter dated 10/24/06. Additional information has been added to the “Investigation and Analysis” section of the FEIS regarding the determination of average annual flood damages.

Comment: *“Did you ever seriously consider the NO BUILD alternative or other alternatives?”*

Response: See response to E. Webster email of 10/20/06.

Sherry Yurcaba email of 10/23/06 4:57 pm- Comments noted

Joyce McEvoy email of 10/24/06 2:35 am – Comments noted

Joyce McEvoy email of 10/24/06 2:45 am – Comments noted

David McEvoy email of 10/24/06 2:47 am – Comments noted

Dana Pompei email of 10/24/06 12:45 pm – Comments noted

Response to Linda Foltz’s email of 10/24/06 12:57 pm

Comment: *“... The document’s cover page is misleading... Please include a list of specific individuals...Did NCRS personnel write this?... Do these individuals have thorough knowledge of flood-related problems with the Lost River Valley during the last 30 years?”*

Response: See response to E. Webster’s email of 10/23/06.

Comment: *“The document contains no actual flood related data to correlate with “your” annual flood damage cost of over one-million-dollars... Where does this million dollar figure come from?”*

Response: See response to EPA letter dated 10/24/06 regarding the calculation of flood damages

Comment: *“Is this material presented only to rationalize the construction of additional dams in the Lost River Valley?”*

Response: See response to EPA letter dated 10/24/06.

Charles Foltz email of 10/24/06 1:00 pm – duplicate of Linda Foltz email of 10/24/06

Mark Tesoriero’s email of 10/24/06 1:06 pm – duplication of Elizabeth Webster’s email of 10/23/06

Response to Wesley Foltz's email of 10/24/06 1:04 pm

Comment: "No flood damage is cited yet there's a million-dollar cost conclusion on page 9. The following facts are excluded from the document: -- zero homes have been lost to flooding in the last 30 years -- no flood related deaths in the last 30 years"

Response: See response to EPA letter dated 10/24/06.

Comment: "The cover page states it was prepared by Potomac Valley Conservation District, Hardy County Commission and the West Virginia State Conservation Committee. However, individuals from these groups have never read the manuscript."

Response: See response to E. Webster's email of 10/23/06

Comment: "The public scoping workshop cited on page 52 hardly meets intent. Landowners were not given copies of the draft EIS before or during the August '06 meeting as promised by the District Conservationist. Therefore, individuals could not comment on the document."

Response: See response to E. Webster's email of 10/20/06

Conrad Christiano email of 10/24/06 4:17 pm – Comments noted

Pat Polfliet email of 10/24/06 9:13 pm – Comments noted

Response to Toni and Dennis Torboli's letter, undated

Comment: "To what purpose other than spending much needed tax dollars we need spent elsewhere in WV is this damn [sic] going to serve????"

Response: Project purposes are stated in the FEIS. They include watershed protection, flood damage reduction, and rural water supply.

Response to Joem Webster letter of 10/09/06

Comment: "The population count includes transients (and probably illegal immigrants)."

Response: Population counts are based on United States Census data and are representative of the population projected to use resources such as water.

Comment: "Then there is the cost of upkeep on all of these dams and the fact that modifications will take more money for the Kimsey Run dam."

Response: The modifications to the Kimsey Run dam were provided in the DEIS as a matter of comparison for the different water supply options. No additional modifications to the Kimsey Run dam will be necessary unless Site 16 isn't built and Kimsey Run becomes the next most likely source for water supply. The upkeep on the existing dams is referred to as Operation and

Maintenance and is included in the costs in Tables 1-6 in the FEIS. Routine mowing, inspection, and monitoring of the sites is the responsibility of the local sponsors.

Response to document entitled “PLEASE READ THE Environmental Impact Statement (EIS) for Lost River” provided to the WV Conservation Committee and the Potomac Valley Conservation District by local citizens

Comment: “The front cover does say, “Prepared by: Potomac Valley Conservation District...”

Response: Correct, they are an official sponsor of the project and assist in the preparation of the report.

Comment: “According to page 2: The project life is 100 years. I thought most dams have a 50-year life. Was making it 100 years the only way to get the benefit-cost ratio to work?”

Response: See Response to E. Webster email of 10/20/06

Comment: “According to page 2: No more than 9.6 acres of wetlands will be impacted. According to the USDA-NRCS Web Soil Survey, there are over 30 acres of wetlands in the project area...”

Response: Hydric soils are defined by the National Technical Committee for Hydric Soils as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (top 20 inches). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils and wetland hydrology (US Army Corps of Engineers, Wetlands Delineation Manual 1987). Criteria for all three characteristics must be met for areas to be identified as wetlands. Hydric soils without the hydrology (standing water) or hydrophytic vegetation components do not meet the definition of wetlands.

The soil survey does not identify the presence of hydrology or hydrophytic vegetation and therefore, does not indicate the existence of wetlands. Approximately 29.55 acres of hydric soils were identified within the project area. These soils were used as an indicator of potential wetlands in lieu of completing wetlands delineations within the project area. The surface drainage, comprised of a deepened intermittent stream channel, appears to intercept much of the hydrology originating from the hillside seeps on the north side of the project area. Without this hydrology, soils mapped as Melvin silt loam and Dunning silty clay loam lying south of the drainage way cannot be classified as wetlands. This assumption is supported by the cropping history of fields lying between the drainage ditch and Lower Cove Run in the project area.

The hydric soils mapping units lying above (north) of the drainage ditch have greater potential to be wetlands because they have unintercepted hydrology. These potential wetland areas that are at or below the permanent pool area or will be disturbed by the construction of the dam will be

adversely impacted by the project. Wetland areas that are not disturbed by construction activities and are at an elevation higher than the permanent pool will not be adversely impacted according to consultations with the WV DNR and US FWS.

Wetland delineations will be completed prior to the start of construction and wetland mitigation measures will be implemented as a condition of the Corps of Engineers 404 permit, State 401 certification and in consultation with the WV DNR and the US FWS.

Comment: “According to page 2: The Lost River Watershed population estimate is 2600 (That’s 21% of Hardy Co. population). Yet in the back of the £15 [sic] (Appendix E Table 4 page 3), water need is based on 49% of the county’s housing units.”

Response: Correct, current population of the watershed is estimated at 2,600.

The projected water demand was developed through coordination with the Hardy County RDA. The report is based on the best available information at the local level.

Table 4 also shows the percent of the county population in the service area for the proposed public water supply is 42%. Water demand is based on the industry standard of 150 gallons per day per household, thus it is appropriate to use the house count to project demand. The industry standard is an average, taking into consideration houses that use much more water (primary residence) as well as houses that may use much less water (second homes). Additionally, as demographics change and older residents retire, second homes become the primary residence during retirement. This trend is expected to occur in Hardy County, thus many of the second homes will become primary homes.

Comment: “Also, Appendix E Table 2 page 2 shows that the Lost River District population grew 15% from 1990-2000. However, the 2.4 million gallons of water usage per day by 2060 (yes 54 years into the future) is an estimate based on the county’s housing growth of 28% from 1990 to 2000 (shown in Appendix E Table 4 page 3).”

Response: Correct. You will note that the housing growth has actually exceeded 28% in the area of study. In fact it is as high as 41%, so the projections are based on a conservative growth rate of 30%. It is entirely possible that demand will exceed the projected need because of the conservative nature of this analysis. Furthermore, the estimate does not account for any large scale industrial or commercial entities that may locate in the watershed. Thus the water usage is very conservative with regard to industrial and commercial projected demand. Refer to the appended Projected Water Supply report for more information on calculation of residential, industrial, and commercial demand.

Comment: “There are many homeowners in the county that are non-residents. So will 2.4 million gallons really be used everyday in the year 2060?”

Response: See response to previous comment.

Comment: “Also, according to Appendix E Table 3 page 2, the water projection is based on

*housing units for the Lost River **and** Capon districts. How will dams in the Lost River District supply water to the Capon District? Is that realistic? If so, who is going to fund that project”*

Response: See response to E. Webster email of 10/20/06.

*Comment: “No one in the Lost River District is hooked up to water yet. **Appendix E Table 4** page 3 estimated the water need for the project area in 2000 at over 500,000 gallons per day. The area seems to be doing just fine without a dam source. Can you truly justify the need for another water source?”*

Response: Yes. The justification is documented in the report you are citing.

*Comment: “If so, **did** you **know** that Kimsey **Run** dam could be used as a water supply source?”*

Response: See response to E. Webster email of 10/20/06.

Comment: “According to the report “Potential Surface Water Supply Sources.” dated February 10, 2005, the WV Conservation Agency, the USDA Natural Resources Conservation Service (NRCS), the Potomac Valley Conservation District (PVCD), and the Hardy County Commission (HCC) [sic] completed a comprehensive water resource assessment for Hardy Co. The Kimsey Run dam was selected as a back-up to the Parker Hollow dam “because it was a reasonable alternative due to its proximate location, it’s huge contributing drainage area, and because a means of withdrawal was included in the final design to facilitate connecting a supply the at the base of the dam to an installed piping configuration [sic] equipped with a valve” “The Hardy County Commission advocated including dam site #4 [Kimsey Run dam] as an alternative back-up supply due to the belief that re-allocating the dam’s permanent pool to include a supply component was within their fiscal means.”

Response: See response to E. Webster email of 10/20/06.

Comment: “It is reported in the draft EIS for the Lost River Watershed (page 15), dated August 2006, that: With this site’s [Kimsey Run dam] drainage area, it has potential for incorporating a dedicated water supply.’ It is also reported in the draft US [sic] that modifications would have to be made to the structure. The cost would be approximately \$9.5 million, about 1/3 the cost of building a new dam.”

Response: See response to E. Webster email of 10/20/06.

*Comment: “Isn’t \$9.5 **million** (page 15) in modifications of an existing structure cheaper **than** \$24 million (blue pages Table 2A) to build another dam?”*

Response: See response to E. Webster email of 10/20/06.

*Comment: “The Lower Cove dam would cost over \$24 million. (See **blue** pages Table 2A.) Then, it would take additional money to build the water supply/treatment facility.”*

Response: Yes, it will take additional money to build treatment facilities, regardless of the raw water source.

Comment: "It is reported in the draft ETS [sic] that the Lost River Valley has an average of \$1.2 million in flood damages per year. (See blue pages Table 5.) WHERE are those damages taking place? I cannot find a yearly breakdown of flood damages for the Lost River area."

Response: See response to EPA letter of 10/24/06.

Comment: "After the 1985 flood (in which 10 inches of rain fell), repairs in the Lost River area cost approximately \$400,000. That was 20 years ago. Today, that \$400,000 might be equivalent to SI [sic] million. However, the Lost River Valley does not have a "1985 flood" EVERY YEAR!"

Response: The NRCS Emergency Watershed Protection program expenditure in 1985 was only one of many sources of flood recovery money spent as a result of the 1985 flood. The \$400,000 expenditure by NRCS for Lost River following the 1985 flood was for channel restoration only. This does not include any funds spent by FEMA, WVDOH (for repairs to roads, bridges, etc.), local governments, or by private homeowners, farmers or businesses for repairs, damages or losses to crops, fences or inventories. It also does not include work time lost, detours, business lost due to closures or other interruptions to daily life caused by this flood.

Response to Comment Form from Anthony Slater 9/26/06

Comment: "Where is the streamflow data for Lower Cove Run"

Response: Appendix B of the FEIS

Comment: "What is the Water Quality and Sediment Ratio for Lower Cove Run?"

Response: Water quality information is shown in Appendix D.

Comment: "Is a natural stream ripran [sic] area and nature stream buffers better than a man made structure & channel changes."

Response: Additional information has been added to the Alternatives section of the report. Neither alternative is effective in reducing flooding or meeting the raw water needs.

Comment: "What is the effect of the current 3 dams & their benefits?"

Response: This information is displayed in Tabulation 2.

Lost River Committee Counter Summary document, Comments noted

Response to E-Mail Attachment from Stephanie Slater of 10/25/06 1:07 am

Comment: "So, who really prepared this document?" Why were the local sponsors asked to approve a DRAFT EIS prior to the end of the comment period and prior to the final EIS being published? Is it so NRCS can state in the final copy that the local sponsors support the project?"

Response: See response to E. Webster email of 10/23/06; See response to A. Slater email of 10/25/06.

Comment: "What is different that will make this dam last twice as long? Was making its life 100 years the only way to get the benefit-cost ratio to work?"

Response: See response to E. Webster email of 10/20/06

Comment: "In one year, how did the ratio increase to 1.3 to 1? Could it be because the EIS includes the benefits of water supply but NOT the cost of the water supply facility? Redo the analysis to include those costs. Provide a site by site analysis of benefits and cost.

Response: See response to A. Slater email of 10/19/06

Comment: "Is the 9.6 acres accurate since the wetland delineation has not been completed yet? When will the Army Corps of Engineers or EPA do a JD on the wetlands?"

Response: See response to document titled "PLEASE READ THE Environmental Impact Statement (EIS) for Lost River" included elsewhere in this section.

Comment: "There seems to be several problems with the water usage estimate... So, will 2.4 million gallons really be used everyday in the year 2060? How will dams in the Lost River District supply water to the Capon District? Who would fund a water system that would transport water to the Capon District? This cost is NOT considered in the benefit-cost analysis?"

Response: See response to E. Webster email of 10/20/06

Comment: "... The draft EIS states this is not the most cost effective alternative. Why not? Isn't \$9.5 million (page 15) in modifications of an existing structure cheaper than \$24 million (blue pages Table 2A) to build another dam? Why not use modify Kimsey Run dam to use as a water supply source since it has a larger drainage area and already exists? ... In the draft EIS, it is stated that this cost was NOT considered in the cost-benefit analysis. Why not, since it is one of the primary purposes of the dam?"

Response: See response to E. Webster email of 10/20/06

Comment: "Again, the need for water supply is questionable. In March 2004, Ed Kesecker reported that the existing structures would be more than adequate water supply for projected growth. What changed in less than 4 months?"

Response: See response to E. Webster email of 10/20/06

Comment: "If there is a great need for water (which there is NOT), consider a water tower... What would be the expense to pipe water to homes in the Lost River Valley, homes that are so spread out? Has a survey been completed to be sure people are willing to hook up to a public water system? What survey has been done or meeting has been held to determine if the public feels there is a need for water"

Response: See response to E. Webster email of 10/20/06

Comment: "Where are those damages taking place? Today, that \$400,000 might be equivalent to \$1 million. However, the Lost River Valley does not have a "1985 flood" EVERY YEAR! What will this dam protect that the other three do not? The Lower Cove dam will only control a drainage area of less than 6.5% of the entire drainage area."

Response: See response to EPA letter dated 10/24/06.

Comment: "If the comments regarding this watershed and project are not addressed in the EIS, when, where, and by whom will they be answered?"

Response: All comments are addressed in the FEIS.

Comment: "Which agencies received notice of the scoping meetings? How and when did they receive the notice? Were agencies contacted for input after these meetings? Were they actually encouraged to provide expert input? If so, which agencies commented and what were the comments?"

Response: The first scoping meeting (technically an early planning meeting) was held on October 26, 2005. Notices were sent out by mail on September 23, 2005 to the WV Department of Natural Resources, U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, WV Department of Environmental Protection, U.S. Army Corps of Engineers, WV Department of Culture and History, WV Conservation Agency, U.S. Forest Service, WV Division of Highways, Potomac Valley Conservation District, WV Rivers Coalition, WV Sierra Club, Potomac Headwaters Alliance, and the Cacapon Institute. Concerns identified at this meeting were addressed in the DEIS and FEIS prepared for the Lost River Site 16 project proposal. Additional consultations were held with several of these entities to discuss threatened and endangered species, habitat evaluations and mitigation, aquatic resources assessments and mitigation, wetlands delineations and mitigation, fishery habitat enhancements, brook trout ecology and life history, and other environmental concerns. Consultations were held with the U.S. Fish and Wildlife service, WV Department of Natural Resources, WV Department of Environmental Protection and others. Agencies and non-governmental organizations that were mailed individual notices of the August 1, 2006 project scoping workshop were the WV

Department of Natural Resources, U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, WV Department of Environmental Protection, U.S. Army Corps of Engineers, WV Division of Culture and History, WV Conservation Agency, U.S. Forest Service, Potomac Valley Conservation District, WV Rivers Coalition, WV Sierra Club, Potomac Headwaters Resource Alliance and the Cacapon Institute. No formal comments were received from the above listed entities during or following the August 1, 2006 scoping meeting.

Comment: “The August 1, 2006 scoping meeting was not “widely publicized” as indicated in the draft EIS... I thought it had to be publicized in the local papers at least 30 days in advance. Regarding the second public workshop, I found in one paper that it was advertised as a project in Hampshire County, WV instead of Hardy County, WV. Where was it advertised that the public could comment until October 25?”

Response: The August 1, 2006 scoping meeting was advertised in the Federal Register on July 11, 2006 with the Notice of Intent to prepare an EIS for the Lost River Watershed. Additionally, the August 1, 2006 meeting was listed in the legal notices for the Notice of Intent published in The Moorefield Examiner, Hampshire Review, Cumberland Times-News and Daily News-Record. Notices of the August 1, 2006 meeting were sent directly to affected landowners on July 10, 2006. Notices and advertisements are to be published at least 15 days before the meeting. The Notice of Availability for the Draft EIS, published in the Federal Register on September 8, 2006 and in legal advertisements in the four newspapers listed above, stated that comments were to be received by October 25, 2006. A poster listing comment procedures at the September 26, 2006 informational meeting listed three ways that comments could be submitted and that they were to be received by October 25, 2006.

Comment: “What social impact will this project have on a community that has opposed this whole watershed project from its beginning in the late 1960s? What would the community lose if this project is constructed?”

Response: Social impacts are included in the effects section of the FEIS. Refer to this section and Tabulation 2 for the effects of the “No Action” alternative.

Comment: “How might this project degrade the watershed? What are some of the worst case environmental scenarios that could be caused by this project?”

Response: The impacts of this project on environmental resources in the watershed are described in the effects section of the FEIS.

Comment: “Has a habitat evaluation procedure been completed? If so, which agencies were involved or was it only one NRCS?”

Response: The Habitat Evaluation Procedure (HEP) has not been completed. This work will be completed at such time as personnel may access property to be effected by the proposed project. Information gathered from HEP will be used to define project affects upon indicator species and to develop avoidance, minimization or habitat mitigation measures prior to project

implementation. The HEP analyses will be conducted by NRCS with participation to be requested from WVDNR and the USFWS.

Comment: “How will the project affect wildlife habitat? What will this project do to the trout population since the Lower Cove Run is identified as a trout-reproducing stream (Tier 2.5 stream)?”

Response: The project affects upon terrestrial and aquatic wildlife habitats are discussed in the Land Use and Upland Habitat section under Environmental Consequences. A more thorough discussion of brook trout life history and potential impacts has been added to the Aquatic Resources section. Proposed rules associated with the Tier 2.5 Stream Antidegradation classification will allow up to ten percent degradation in water quality. The proposed Site 16 impoundment is not expected to exceed these limits if these rules are promulgated.

Comment: “How can you be sure this will not set precedent for taking of national forest areas for other projects?”

Response: The US Forest Service is a cooperating agency. Forest Service land will not be acquired for the proposed Site 16 project. The 10.1 acres of Forest Service land affected by the project will remain in Forest Service ownership. A special use permit will be issued to allow the use and inundation of Forest Service lands. As no Forest Service land will be taken for the proposed Site 16 project, there will be no precedent established for taking additional Forest Service lands.

Comment: “What effect will this project have on the wetlands?” If the wetlands are recreated/mitigated, how will that affect the environment? Is it true that mitigated wetlands “pump” mercury into streams for the first 10 years of their existence? What effect would mercury contamination have on wildlife and habitats in the area?

Response: See the effects section of the FEIS for impacts to wetlands. NRCS is not aware of any increase in mercury contamination to streams that may result from the construction or enhancement of wetlands that may result from mitigation. The presence of mercury, which may be the result of atmospheric deposition, is not expected to differ between the recommended alternative or the no action alternative.

Comment: “How will the project alter an identified historic site? Has the phase 2 archeological studies been completed on the sites that were recommended?”

Response: The impacts to cultural resources are identified in the effects section. Phase 2 archeological studies will be conducted prior to construction.

Comment: “A thorough analysis of other alternatives has NOT been completed since the early 1970s. Why not? 30 years and 3 dams change things. Why is that information NOT included in the EIS? People are not willing to give up their land at this site. Has this been a consideration when looking at other alternatives? If so, how was this done? Where is the information?”

Response: See response to EPA letter dated 10/24/06.

Comment: “Consider the benefits to cleaning debris out of the streams to reduce minor flooding. Consider a voluntary buy-out of property in the floodplain. Thoroughly investigate the “no action future” alternative.

Response: Additional information has been added to the FEIS Alternatives.

Comment: “Why would acres of wetlands be destroyed if the goal is flood control?”

Response: See discussion of Wetland Restoration Alternative.

Comment: “Regarding the other three constructed sites: How do they currently serve their purposes? They are NOT supplying water to anyone yet. How does that create a need for the fourth? The cost-benefit analysis on those sites has NOT been updated since they have been installed. Why? Provide the information to determine if the other three sites have met the “need” or have the capability of meeting the “need”.

Response: See response to A. Slater email of 10/19/06

Comment: “Will the project be in compliance with federal law and regulations? If yes, who checks to be sure that it is? Will the project be in compliance with the National Environmental Protection Act? If yes, who checks to be sure that it is? Will the project be in compliance with all state laws and regulations? If yes, who checks to be sure that it is?”

Response: Yes. Federal and state agencies responsible for issuing each permit will ensure compliance with their permit requirements and associated conditions. Inspectors with the WV Department of Environmental Protection are responsible for enforcing the provisions of state’s water quality protection statutes and insuring that erosion and sediment control measures are properly installed.

Comment: “Where will the wetlands be recreated? It is suggested in the same watershed; where would that be in the Lost River Watershed?”

Response: It is expected that wetland mitigation will be accomplished within the proposed Site 16 project area. A Mitigation Summary has been added to the FEIS

Response to Dan Radke E-mail letter of 10/25/06

Comment: “... the benefits of those dams must be removed from your projection to obtain the incremental benefit of the final dam... Financially, I do not see the benefit of building this dam. I suggest that the financial costs of this project be re-examined and that we isolate the true costs and benefits of this single dam.”

Response: Refer to Tabulation 2.

Comment: "I understand that recently, the justification of adding a water supply to Eastern Hardy County has become a major reason to move forward with this project. Although I agree the County is growing, and may some day need this water source, this was not the justification made for building this dam."

Response: It is the responsibility of the planning agency to assess current conditions and re-evaluate need. Needs in the watershed have changed from a flood control and intensely developed recreation site to a flood control and water supply site. It is within the scope and authority of Sponsors to request a change in purpose to meet the changing needs of the watershed.

Response to faxed cover letter from Anthony Slater of 10/25/06

Comment: "... who is reading, writing, researching, studying, and checking to make sure this document is correct and project is feasible?"

Response: As part of the Draft EIS review, interested agencies and the public are invited to comment on all aspects of the document. NRCS policy requires the National Water Management Center to review the document for compliance with NEPA and other agency planning guidelines.

Comment: "Would it be cheaper to do floodplain land buy-outs? Why is that not an alternative? Wouldn't that be less than \$24 million?"

Response: Additional information has been added to the Alternatives section of the report regarding floodplain buyouts.

Comment: "Annual project benefits lists all the watershed benefits, but the NET Annual Beneficial Effects is only 393,600 per year? Does this mean that by building Site 16 that the annual NET benefits for the project will decrease by 46%? Is that a feasible project when net benefits decreases? Does the assumed needs out way [sic] feasibility reasons?"

Response: Tabulation 2 in the FEIS displays the net beneficial effects. Net benefits are positive. For the investment necessary to build Site 16, there are substantial gains in the water supply benefits, incidental recreation benefits, flood damage reduction benefits, and other categories listed in Tabulation 2. The need for and feasibility of the project are confirmed in the FEIS.

Comment: "Which project discount rate is correct? ($5\frac{1}{8}$ or $5\frac{1}{2}$) Does the analysis years and ration [sic] work like mortgages, the longer the term years, the less you pay per month but pay more over life?"

Response: The project was authorized in 1974 at a project discount rate of $5\frac{1}{2}\%$. Due to a change in purpose, the project had to be re-evaluated using the current water resources discount rate of $5\frac{1}{8}\%$. All calculations in the FEIS use the current water resources discount rate of $5\frac{1}{8}\%$. For informational purposes, both rates are displayed in the Summary, as required by the National Watershed Manual.

Comment: "Why did Ed Kesecker with the WV-NRCS ask the Hardy County Commission and Potomac Valley Conservation District to vote on approving a Draft EIS that is without public and agencies comments that have not been addressed and resolved yet?"

Response: Both the Hardy Co. Commission and the Potomac Valley Conservation District are Local Sponsors for the project who have formally requested that USDA-NRCS proceed with planning and development of the Lost River Watershed Project, including the preparation of the draft supplemental work plan and environmental impact statement needed to pursue completion of Site 16 on Lower Cove. All three Hardy County Commissioners attended the Oct. 4, 2006 meeting of PVCD. At that meeting the Commission and PVCD members were asked to respond to the draft document. The HCC expressed continued support for the project and the DEIS, and presented a letter so stating. The PVCD also voted continued support for the draft document. Both organizations will receive copies of the final supplemental work plan and EIS document, which will include all comments received following issuance of the draft and agency responses to those comments.

Comment: "Does the draft EIS tell any where how many affect [sic] landowners there are? Does the draft EIS say that 11 of the 12 affect [sic] landowners DO NOT SUPPORT this project? Does the draft EIS [sic] how many hundreds signature are on petitions."

Response: The DEIS does not estimate the number of affected landowners. (See response to subsequent comment from A. Slater letter of 10/25/06 regarding "tax maps".) The draft EIS acknowledged local opposition to the project. All public comments were considered in the preparation of this FEIS.

Comment: "Is it cost feasible to lose and mitigate the stated above for \$24 million, rather than keep them natural and not spend a dime?"

Response: Project feasibility is demonstrated throughout the FEIS. Any necessary mitigation is included in the project cost and discussed in the mitigation summary.

Comment: "The 1974 Work Plan has been supplemented three times to add sponsors, change land treatment, and add water supply. According to that the draft EIS has not been fully researched, other alternatives explored, and environmental impacts studied since 1974? Is this correct?"

Response: No, that is incorrect. See response to EPA letter of 10/24/06.

Comment: "Does this mean that all land treatments have been accomplished with the current three dams? There is only 117,200 acres in the entire watershed, is there any studies or documentation that shows/proves the current conservations efforts are doing there [sic] job? Is it feasible that more money needs to be spent on a project that is already protecting 82% of the watershed?"

Response: See response to E. Webster email of 10/20/06. As stated, land treatment identified in the 1974 Work plan has been applied, resulting in improved land cover and hydrologic

conditions, and subsequent reduction of runoff, erosion, and sedimentation. However land treatment measures alone do not meet project sponsors' objectives of increased flood protection and public water supply.

Comment: "Do supplements mean full study or revise old work plan? More than 30 years has past, has the work plan been updated to current goals, standard, and changing environment? If so where are those studies in the draft EIS?...Isn't this asking to relook and update? Why does the draft report keep referring back to the 1974 Work Plan then, to see more info on project?"

Response: See response to EPA letter of 10/24/06.

Comment: "Where is the 2004 Hardy County Resources Study? Shouldn't be included in the draft EIS since everything the sponsors want is water supply?"

Response: <http://www.wv.nrcs.usda.gov/programs/watershed/lost/hardyCountyWR.pdf>

Comment: "Study and need are used several times on this page, how can the draft EIS justify or prove the need, when words such as trends, predict the future, projected through 2060"? Can the draft EIS can [sic] be justified and feasible when the use of guessing words determines what the sponsors need?"

Response: Refer to the "Need for Supplement" portion of the FEIS.

Comment: "Doesn't the draft EIS indicate that dam Site #4 and Site #10 can be used for water supply?"

Response: See response to E. Webster email of 10/20/06

Comment: "Will Site 10 meet the needs when there are not drought periods? Does the County participate in water conservation? Is Site 16 feasible or needed only if there is a drought period? If Site 10 will do 75%, isn't the other dams currently piped to release water or could persons pump water out?"

Response: Refer the Water Supply Report in Appendix E. The safe yield analysis is included in that document. Water conservation measures are generally voluntary and can be implemented any time individuals have a desire to do so. It is impractical for local residents or businesses to haul water to their homes, farms, or businesses.

Comment: "... industrial park proposed for Wardensville area. Who is water be [sic] provided to when there is no structures or no need yet? Aren't these sites all closer and down stream of the all ready [sic] constructed Dam Site #10 flood control/water supply? Shouldn't piping and supplying water with current facilities be first and then accurate numbers for need?"

Response: Information regarding the projected commercial demand is included in Appendix E. Essential infrastructure, such as roads, electric, water, and sewage, must be in place so that businesses will locate in industrial parks.

Comment: "Doesn't this mean that each project is separate, and each should have its own benefit/cost ratio? If you eliminate one of the five sites doesn't that mean that the other four sites have to work better to make up for what the other site would have helped with? Wouldn't that increase the cost of building Site 16 since it would have to make up for not building site 23?"

Response: The watershed project was planned and authorized based on a series of five upstream impoundments and the land treatment work. Due to geologic considerations, Site 23 was eliminated. The other four sites were not increased in size or costs as a result of the elimination of Site 23. Project benefits were re-evaluated based on the total project of 4 sites and the land treatment component.

Comment: "Is there dates and documentation for each scoping meeting that was held? (Such as paid advertisement, ample time to receive and respond, and locations)."

Response: Information regarding the scoping meeting is included in the FEIS in the Consultation and Public Participation section. The scoping meeting was conducted in accordance with NEPA and NRCS guidelines. Also see response to Stephanie Slater questions from 10/25/2006 email.

Comment: "Tabulation 1: These were answered no [sic] why? Is wetlands ecologically critical areas? Essential fish habitat? Zoning and floodplain management in effect? Project is not in a regional water resources planning area? Scenic attributes not effected? All these questions affect a watershed and affect the Lost River- Annual flood damages cost \$1,202,500. Annual Net Benefit is 393,600. What is the ratio? What are you saving?"

Response: Refer to the Scope of Environmental Impact Statement section for information regarding the degree of concern assigned to each resource. The benefit cost ratio is displayed in Table 6.

Comment: "If this is a true statement in the draft EIS, was there need for water supply in the 1974 plans? If everything remains the same nothing has increased such as agriculture runoff, development runoff, and population that all affect a watershed? If this is the case shouldn't the entire watershed work plans, environmental, social, and economic studies all be updated?"

Response: See response to EPA letter dated 10/24/06 and refer to full text in the Need for Supplement and Affected Environment portions of the FEIS.

Comment: "Is there any where in the draft EIS that states what the current water use is in Hardy County? Is there any place in the draft EIS that tell (sic) what the total capacity of the current water supplies are? Wouldn't these be very useful and base lines for where Hardy County needs are and might be with current water resources? Does the NRCS normally conduct water supply needs for counties? Who is paying the NRCS to study and create these water supply reports?"

Response: http://www.wv.nrcs.usda.gov/programs/watershed/lost/lost_river.html. See response to E. Webster email of 10/20/06.

Comment: "... shouldn't there be more than eight lines describing alternative flood control measures and their benefits? Has the sponsors and agencies really taken an effort and hard look at alternative? ... Does that mean the alternatives have not been reevaluated since 1974? How many people and times has the public asked for alternatives?"

Response: See response to EPA letter dated 10/24/06.

Comment: "Why are water tanks and wells alternatives along with the current dams?"

Response: The Alternatives section of the FEIS discusses the viability of wells and other raw water sources.

Comment: "What are the gallons per day capacity for each system? What is the total gallons per day these entities currently use? The only potential customer base is in the Baker area? How many people live in Baker? How many businesses? With no current potential customer base, wouldn't Site 10 supply water to Baker? How is Site 16 feasible when it is the furthestest away from any current or project need area? Wouldn't piping cost more than[sic] what residents could pay?"

Response: Information concerning the current demands, system capacities, existing and potential customer base, financial considerations, and other information can be found in the 2004 Hardy County Water Resources Report http://www.wv.nrcs.usda.gov/programs/watershed/lost/lost_river.htm and other references cited in the FEIS.

Comment: "Is it feasible to get water from one of these sites before you spend \$24 million on Site 16?... What are the current gallons per day usage for Hardy County? Would their current systems plus Site 10 be enough for the potential water needs for Hardy County?"

Response: See response to previous comment.

Comment: "Does this mean that a current Site 4 can meet the sponsor's water supply needs? What is the current volume of water that Site 4 can supply? Site 4 would only cost \$9.5 million to be a dedicated water supply for Hardy County? Is \$9.5 million cheaper than \$24 million?"

Response: See response to E. Webster email of 10/20/06

Comment: "Can anyone predict or pin-point a cause of flooding? Is there data to show stream flow and sedimentation rates coming from the Lower Cove Run? Does the Lower Cove Run flood or does Lost River? Could Lower Cove Run have a natural flood basin and wetland to slow down the flow and catch sediments before it [sic] get to the Lost River? Could stream canalization or riprap (stone) be used to create a flow and sedimentation barrier and a natural stream habitat that would be a [sic] less costly?"

Response: Flooding is generally caused by rainfall which results in runoff that exceeds stream channel capacity. All streams, including Lower Cove Run and Lost River, have instances when they flood, with flow extending onto the floodplain adjacent to the streams. Refer to the appendices in the FEIS for stream flow and sedimentation information. Alternatives such as stream channelization (referred to as ‘canalization’) were considered, but found infeasible. Information has been added to the Alternatives section of the FEIS regarding this alternative.

Comment: “Aquatic resources...When was [sic] they evaluated? 1974? With all the changes in the watershed and implementing dams shouldn’t the aquatic resources be updated?”

Response: Aquatic resources in the affected area of each completed site were analyzed in the supplemental documents and information reports prepared prior to construction of those sites. Aquatic resource documentation for Lower Cove Run is contained in the aquatic resources section of this FEIS. Additional benthic invertebrate data and aquatic habitat information will be collected from Lower Cove Run at such time as the property may be accessed by personnel and prior to project construction.

Comment: “It is estimated that 7,456 angler days of recreation annually? How can you get 7456 when there is only 365 day in one year? What is the current angler day’s usage for the nine impoundments already in Hardy County? Who pays for stocking? Does this number include natural streams also?”

Response: Angler days were determined using data collected by WVDNR on the number of fishermen using DNR impoundments for fishing activities. An angler day is one fisherman fishing for one day. If ten persons fish during one day, ten angler days would be represented. Angler days reported for Lost River impoundments do not include angler days for fishing in streams. Recreation values were determined from the National Hunting, Fishing and Wildlife Associated Recreation Survey, Water Resources Council Principles and Guidelines, and other references cited in the FEIS. The WV DNR stocks and manages the fisheries at Sites 4, 10, and 27 and will do so at the proposed Site 16.

Comment: “Has archeology surveys been done on the Phase II locations? Has [sic] Phase I surveys been done on the spillway site since the original plans have been altered?”

Response: Refer to the Historic, Scientific, and Cultural Resources effects section of the FEIS for information on the Phase I and Phase II surveys. The Phase II surveys will be completed prior to construction.

Comment: “How will you replace this invaluable resource [prime or important farmland] on the Lower Cove Run when 75% is already forest?”

Response: The conversion of farmland and forest land to a lake environment is acknowledged in the FEIS.

Comment: “Wetlands... Does that mean that out of 220.7 acres, 5% are wetlands? What is the cost of mitigation and where can you put them?”

Response: A Mitigation Summary has been added to the FEIS.

Comment: “Would these areas of study be important to study and have recent documentation in a draft EIS to be evaluated by others before a final draft: adverse effects, short/long term impacts, irreversible/irretrievable resources, land conflicts, risk & uncertainty, rationale for recommended alternatives be considered? Would these be costs or benefits?...Why are none of their comments or concerns distributed or printed in the draft EIS?”

Response: Additional information has been added to the FEIS as a result of comments on the Draft EIS.

Comment: “Consideration of water supply – 8 questions? Is that an open ended question, does that mean alternatives, need or can current sources be used?”

Response: Additional information has been added to the FEIS regarding need and justification for adding raw water supply as a purpose to Site 16.

Comment: “Benefit cost analysis – 8 questions? Is Site 16 feasible when the total watershed NET benefits are reduced by 46%?”

Response: Yes, Site 16 is feasible.

Comment: “Effectiveness of existing dams – 7 questions? Where in the draft EIS is this question answered and where are the studies to support them?”

Response: Tabulation 2 and Tables 1-6 in the FEIS provided information regarding the effectiveness of the existing dams and the proposed Site 16.

Comment: “Wetlands – 7 questions? How valuable are natural wetlands? What is the cost of mitigating them? Where do you locate additional land for wetland use?”

Response: A Mitigation Summary has been added to the FEIS. Onsite wetland mitigation for other recent NRCS projects has cost approximately \$2,500 per acre.

Comment: “Why are the previous comments not in the draft EIS? Who has all of them? Does each agency or sponsor turn them in to one location so that they can be compiled and responded to by the final EIS?”

Response: See response to S. Slater email of 10/25/06

Comment: “Was the cost estimate at 2006 or later rates? Would you not want to estimate or use projected for the future cost, since the project will not be done in 2006?”

Response: Costs and benefits are analyzed at 2006 prices in accordance with NRCS policy. Discount rates for water resources projects are issued annually by the Water Resource Council.

Comment: "When is the last time the tax maps were updated? What years \$\$ numbers were use to estimate? How many landowners are affected? How many will lose everything? Has anyone approached landowners to get a current appraisal or to tell them what their property is worth?"

Response: The Hardy County tax maps are updated annually. Land rights cost estimates for Lost River site 16 were updated in March 2006. At that time there were 231 acres of proposed fee take acquisition involving ten parcels, and 44 acres of permanent easement involving two additional parcels. Of the twelve effected parcels, four would be taken in their entirety. There were a total of three residences (two houses and one mobile home) whose occupants would have to be relocated as a result of the proposed acquisition.

Landowners have not been approached regarding specific property values. Upon authorization for construction of the project, local sponsors will advertise for bids and engage a certified land surveyor to survey portions of properties to be taken, and a certified real estate appraiser and review appraiser to determine current market value of the surveyed properties, as well as any quantifiable damage or benefit to the residue. That certified appraised value is the basis of the sponsor's offer for settlement, plus any eligible reimbursements associated with residence and/or business relocation resulting from property acquisition for the project, as mandated by provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as Amended.

Comment: "Literature cited that is outdated...In the day and age of computers, GIS, satellite mapping, new sampling methods some of the literature is outdated. Can new web soil surveys and digital technology be used?"

Response: Yes, aerial photography and updated mapping were obtained for this FEIS.

Comment: "Residential demand, what is that based on actual households (WV residents) or housing units? Do cabins count as units? Weekend homes?"

Response: Information contained in Appendix E describes the basis for the projected residential water demand. The demand is based on total housing units. Housing growth is projected from current trends for new construction in the area. Housing growth does not distinguish between WV residents and non-residents or whether they are primary or second-home residences.

Comment: "Table 1 shows the housing unit growth, not the population or household growth; wouldn't the numbers be estimated to [sic] high by using these numbers? Why don't you use households since they are the everyday users?"

Response: The information presented in Appendix E represents the best estimate of future water demands. This information has been developed in consultation with the Hardy County PSD and the Hardy County Commission. There is no compelling reason to use households rather than housing units.

Comment: “Why is the Capon District used? This table is compromised because there are three different localities being used, is that done any [sic] where else in the draft EIS? ...If 85% have water what is the current daily usage? Would you need Site 16 if you only have to supply 15% more of the population? Why couldn’t another dam site (4 or 10) be more than enough water supply to meet the projected need? Why and how can it be feasibly [sic] to have one dedicated water supply to feed the whole county?”

Response: Refer to the Water Supply Report in Appendix E.

Comment: “Table 4 – Projected residential need through Year 2060. Why is there no base line – What is the current daily water usage for Hardy County? Shouldn’t that number be the basis along with the capacity of the current water systems? Is the current usage numbers needed to project the need for water supply for Hardy County? Where is the number in the draft EIS?”

Response: Please see the following link for that document:
<http://www.wv.nrcs.usda.gov/programs/watershed/lost/hardyCountyWR.pdf>.

Comment: “Why is water supply needs determined by the sponsors with the assistance from the NRCS and not a private third party that is bias?”

Response: The Hardy County PSD and Hardy County Commission are most familiar with the water supply needs in Hardy County.

Stanley Wilkins letter of 10/23/06 – Comments noted

Connie Wood letter of 10/23/06 – Comments noted

Rebecca Strawderman comment form of 10/23/06 – Comments noted

Heather McClure comment form of 10/22/06 – Comments noted

Odessell Sherman comment form of 10/19/06 – Comments noted

Frank Rosso comment form of 10/21/06 – Comments noted

Norman Ashby letter of 10/21/06 – Comments noted

Darryl Ashby letter of 10/21/06 – Comments noted

Connie Wood letter of 10/23/06 – duplicate of email; Comments noted

Response to Robert See, Jr. letter sent as an attachment to Crystal Lake's email of 10/25/06 9:22 am

Comment: "Please explain how water can be piped from the Lost River area to Wardensville, but the terrain is too steep for water to be piped from Wardensville to Lost River."

Response: See response to E. Webster email of 10/20/06

Comment: "Isn't Site 10 adequate for these needs? ... Wouldn't spending approx. \$9 million to use it as a water supply make more sense than to spend \$24 million and take additional homes and farms?"

Response: See response to E. Webster email of 10/20/06.

Comment: "Have you considered the feasibility of using some overflowing springs as a water source?"

Response: The FEIS includes an alternative analysis of springs.

Comment: "Has a study been done to determine if the people who live in the area will pay for water from a public water supply? What is the population requirement to make public water less costly than private wells?"

Response: The Hardy County PSD, which is responsible for public water service in Hardy County, has endorsed the FEIS. Issues related to number of customers, customer affordability, etc. will be determined by the Hardy County PSD, with oversight from the WV Public Service Commission. There is no known 'population requirement'.

Comment: "Did the writers of this document seriously consider the No Build, No Action Alternative?"

Response: See response to E. Webster email of 10/20/06.

Comment: "Please identify specifically what building and home will be protected by Dam 16."

Response: See response to EPA letter dated 10/24/06.

Comment: "Have you accounted for the damages caused by Howard's Lick, or Fravel's Run, or Mill Gap Run, or the numerous unnamed streams that drain into the Lost River?"

Response: See response to E. Webster email of 10/20/06.

Comment: "On page 22, the draft EYES [sic] you state that "55 square miles of drainage area will be controlled". You contradict that amount on 23 by stating "Site 16 will trap sediment

from the 11.8 square miles of drainage area behind this structure”. Why the huge discrepancy? Why didn’t you translate that amount to a percentage. Isn’t that 8%?”

Response: See response to E. Webster email of 10/20/06.

Comment: “Do you have studies to show how much flooding has increased in the past 30 years? The past 10 years? Can you justify that statement with fact based on actual studies?”

Response: See response to E. Webster email of 10/20/06

Comment: “Has the water quality of Lower Cove Run been tested periodically? Have these results been published? Has a study been done to determine the possible vegetative impact to the main stream of the Lost River if the water from Lower Cove Run water is deleted from its flow?”

Response: See response to E. Webster email of 10/20/06.

Crystal Lake email of 10/25/06 9:26 am – Comments noted

Crystal Lake email of 10/25/06 9:24 am – Comments noted

Response to E-mail Attachment from Crystal Lake of 10/25/06 9:22 am

Comment: “Construction versus modification of existing site? Did you seriously consider using the dam at Kimsey Run as it has been constructed as a water source? On page 15, it states the cost associated with modifications to Site 4 would be approximately \$9,500,000. This alternative is not the most cost-effective. You would spend \$24,000,000 to construct a new dam at Site 16, Lost City. Since when is 24 million less than 9.5 million?”

Response: See response to E. Webster email of 10/20/06

Comment: “What is the basis for your statement on page 17 that states the I [sic] lack of a dependable water supply will also result in higher fire insurance premiums for homeowners and businesses due to insufficient fire protection? Have you obtained data from the insurance companies to support this claim? Are you implying that the fire companies would not have water to fight fires without the construction of Site 16 at Lost City? Can they not use water from the 3 dams already constructed? Additionally, the PVSCD has helped with the installation of a number of dry hydrants in the Lost River Valley. Do the dams and dry hydrants give adequate supply of water for fire protection?”

Response: See response to E. Webster email of 10/23/06

Comment: “Please describe what changes have occurred and specifically where they occurred.”

Response: See response to E. Webster email of 10/23/06

Comment: "Please identify where this conversion has taken place. What public use was realized and is this really an improvement or not?"

Response: See response to E. Webster email of 10/23/06

Comment: "Do you have sworn statements from people who will testify to this claim? What about those who would be impacted if one of these structures breached or if the rainfall exceeded the holding capacity and the dam overflowed? Did you do a before and after survey to see if people really felt safer before or after construction? What about the mental anguish and stress on the people that opposed these dams? ... What about the mental anguish of those who might lose their homes or farms to these projects? ... Did the proponents of these dams consider the wishes of these people? Did you consider the mental anguish and stress of those who do not believe your propaganda and who do not think this project has merit?"

Response: See response to E. Webster email of 10/23/06

Mrs. Abner Moore email of 10/27/06 4:37 pm – Comments noted

Rolfe Ashby letter of 10/21/06 – Comments noted

R. Edward Ashby, Jr. letter of 10/21/06 – Comments noted

C. Taylor letter of 10/29/06 – Comments noted

Response to E-mail Attachment from Bessie See of 10/25/06 9:24 am

Comment: "Who specifically from these groups contributed to this document? Please include a list of specific individuals who have helped on the actual writing... How many of the individuals who worked on this draft have intimate knowledge of the Lost River Valley related to flooding during the past 30 years?"

Response: See response to E. Webster email of 10/23/06

Comment: "What specific years where [sic] there floods and which specific years where [sic] there drought conditions? ... How do you arrive at an average annual flood damage figure in excess of a million dollars?"

Response: See response to EPA letter dated 10/24/06.

Comment: "Did you ever seriously consider the NO BUILD alternative or other alternatives?"

Response: See response to E. Webster email of 10/20/06.

RECOMMENDED ALTERNATIVE

Refer to the 1974 Work Plan – FEIS and Supplements 1, 2, and 3 for information on the setting and construction specifics for Site 4, Site 27, Site 10 and the land treatment component. The following information is specific for Site 16.

Setting

Site 16 is located in Hardy County on Lower Cove Run. Lower Cove Run is a tributary of Lost River and is regionally within the Potomac River Basin. The site is located approximately 0.5 mile southeast of the community of Lost City (Appendix B).

The site's physiography is valley and ridge with hilly topography. Ground surface elevations in the stream valley range from 1495 to 1520 feet Average Mean Sea Level (AMSL) at the dam site. Elevations of the surrounding hilltops range from 1640 to 2120 feet AMSL. The valley bottom at the dam site is approximately 1,334 feet wide. Hill slopes are moderately steep.

Planned Action

The planned action consists of completing Alternative 1 by constructing Site 16. Site 16 will consist of a compacted earth and rock fill embankment, encompassing a volume of 1,338,000 cubic yards. Fill will be obtained from the excavation of the auxiliary spillway, as well as other sources on site. Borrow areas providing a source of clay soils, necessary to limit water seepage through the dam, will be obtained from the permanent and flood pool areas, along both abutments, and in the auxiliary spillway. A cutoff trench will extend into the foundation, and a drainage system will collect seepage.

The principal spillway is planned as a drop inlet structure consisting of a reinforced concrete riser, a reinforced concrete pipe, and a reinforced concrete impact basin to dissipate energy at the outlet end of the pipe. The auxiliary spillway will be 400 feet wide and shall be located in the left abutment. Approximately 40 acres of flowage easements will be needed in the event of flow through the auxiliary spillway. The surface area of the permanent pool will be 46.6 acres, the surface area of the flood pool at the crest elevation of the auxiliary spillway will be 86.8 acres, and the surface area of the pool at the top of dam elevation will be 97.4 acres. The volume of sediment storage allocation is 229 acre-feet.

Construction will be performed using best management practices, so as to minimize erosion and prevent pollution. Soil disturbance will be kept to a minimum. Disturbed areas will be seeded, limed, fertilized, and mulched immediately after work has been completed.

Temporary bridges or other structures will be used when frequent crossing of streams is required. Diversion channels and sediment basins will be constructed, as necessary, to control sediment discharge from the project area.

Clearing will take place in areas of the permanent pool, dam foundation, auxiliary spillway, and borrow areas. All trees in the permanent pool area will be removed to minimize long-term operation and maintenance costs to sponsors and to minimize adverse impacts to the riser.

The 46.6 acre permanent pool is designed to include 400 acre-feet of water supply storage, which will be accessed via a water supply pipe, mounted to the riser and extended downstream of the structure.

The permanent pool will be available for incidental public recreation, including fishing and electric or non-motorized boating. About 231.5 acres, including the permanent pool and adjacent land, will be placed in public ownership (10.8 acres is already in public ownership with the US Forest Service). The land will be owned by the West Virginia State Conservation Committee according to State Code. The site will be maintained by the Sponsors with the Potomac Valley Conservation District (PVCD) in the lead role. The fishery resources will be managed by the WVDNR including angler access, stocking, and law enforcement. Three occupied houses and associated outbuildings and utilities in the flood pool will need to be relocated to accommodate the project.

Mitigation Summary

Interagency evaluation indicated that the installation of the Lost River Site 16 project would result in unavoidable environmental losses. In order to mitigate for those adverse environmental impacts, the following measures will be included with the implementation of this project.

Cold Water Release and Minimum Flow

The dam will be designed with a cold water release in the principal spillway. This release will be installed on the riser approximately 13 feet below the proposed surface elevation of the reservoir. This depth was based upon temperature data collected in the reservoir pools at Lost River Sites 4 and 10 (Appendix D). The cold water release will minimize any increase in

downstream water temperatures during summer and early fall that might otherwise result from the release of warmer surface water from the impoundment during these warm months. In addition, the cold water release will allow for low flow augmentation during periods of drought in the Lost River watershed. This feature will be consistent with cold water release and low flow capabilities installed at Sites 4 and 10.

Control of Erosion and Sedimentation

An erosion and sediment control plan will be developed by NRCS and approved by the WVDEP. This plan is required in conjunction with the construction storm water NPDES permit and will include Best Management Practices (BMPs) and other measures to minimize soil erosion from disturbed areas and prevent sediment from being deposited in undesirable locations. Erosion and sediment control measures may include minimizing the size of disturbed areas, diverting surface water from disturbed areas, temporary seeding and mulching of soil stockpiles, seeding and mulching areas upon completion of final grading, installing approved stream crossings, installing silt fences, installing sediment retention basins and other necessary BMP measures.

In-stream Habitat Enhancement

In-stream habitat enhancements will be installed in Lower Cove Run to minimize habitat losses associated with the conversion of perennial stream to lake environment. Habitat enhancements will be based upon before and after habitat ratings for Lower Cover Run obtained from the EPA's Rapid Bioassessment Protocols (Barbour, et al. 1999) and PAM-HEP procedures. Measures including, but not limited to, bio-engineering, natural stream restoration techniques and other habitat enhancement methods will be installed on Lower Cove Run upstream of the impoundment and in the stream channel below the principal spillway outlet. In addition, cross

vanes constructed of boulders or logs will be installed below the principal spillway outlet to prevent channel down-cutting and to dissipate energy from discharged water. In-stream habitat enhancements will be coordinated with WV DNR fisheries personnel.

Impoundment Fishery Habitat Enhancement and Fishery Management

Habitat enhancements are planned to be included within the Site 16 impoundment concurrently with the construction of the project. These enhancements will be coordinated with WV DNR fishery biologists with the objective of creating an exceptional channel catfish waters. Habitat improvements will include leaving tree stumps and tree trunks within the permanent pool area, leaving the lake bottom in a rough condition (not graded smooth), creating flat, shallow benches parallel to the shoreline for fish spawning beds, installing rock shelters for catfish spawning areas and cover, anchoring tree tops in the shallow portions of the reservoir for fish escape cover, and other enhancement measures. Fisherman access facilities including a parking area and boat launching facilities will be provided. Fish stocking, population monitoring and management, special fishing regulations and enforcement will be provided by WV DNR in accordance with a project agreement similar to those for Sites 4, 27 and 10.

Upland Habitat Enhancement

Upland habitat will be evaluated prior to initiating construction using PAM-HEP procedures to estimate the habitat units before and after project implementation. Habitat units that may be lost as result of creating the dam, auxiliary spillway and impoundment will be minimized by improving habitat on land adjacent to the facility. Habitat enhancements will include constructing brush piles above the flood pool elevation from vegetation removed to facilitate construction, planting native shrubs and trees for wildlife food and cover, leaving trees and

woody vegetation in the upstream end of the flood pool and limiting mowing to those areas necessary to maintain the dam, spillway and fisherman access. Pin oak trees will be planted in the upstream flood pool area to provide a food source for wood ducks.

Wetland Enhancement

Wetland delineations will be completed in accordance with the Corps of Engineers Delineation Manual (1987) at such time as project personnel have access to property to be utilized for the implementation of Site 16 and prior to filing applications for project permits. Delineated wetlands that are adversely impacted by the construction of the dam, excavation of the auxiliary spillway, excavation of borrow areas or the permanent impoundment, will be mitigated for as prescribed by the Section 404 permit to be issued by the Army Corps of Engineers and the 401 State Certification to be issued by the WV DEP. This wetland mitigation will be planned in consultation with the US Fish and Wildlife Service, WV DNR and others. Mitigation wetlands will be created upon property acquired for the Site 16 project either within the flood storage pool above the impoundment or upon suitable sites below the constructed embankment. In the event that wetland mitigation requirements can not be fully implemented within the Site 16 project lands, the Edwards Run Wildlife Management Area in Hampshire County may be available for use in meeting mitigation needs. This area is located just north of Capon Bridge, WV, and is in public ownership. Wetlands not disturbed by construction activities or permanently flooded by the permanent pool of the impoundment are not anticipated to be adversely impacted. Some areas mapped as hydric soils lie within the flood storage pool area at elevations between the permanent pool and auxiliary spillway elevations. Periodic flooding of these areas is anticipated to enhance the hydrology and result in improved conditions for hydrophytic vegetation. Top soil from adversely impacted wetlands will be stockpiled and distributed in the lake's shallow pool

areas and any mitigation wetlands that may be required. These wetland soils, along with the vegetative matter and seed stocks they contain, will accelerate the establishment of wetland vegetation in those areas.

Permits and Compliance

Section 404 of the Federal Water Pollution Control Act of 1972, as amended, requires that the deposit of dredged or fill material be authorized by the Department of the Army, therefore, a U.S. Army Corps of Engineers permit will be required prior to installation of the project. A Section 401 State Certification as required by the Clean Water Act must be issued by the WVDEP prior to construction. Also, a construction storm water NPDES permit will be required from the WVDEP, Division of Water and Waste Management. A Special Use permit will be obtained from the US Forest Service. The PVCD will be responsible for obtaining the necessary permits, including permits from the West Virginia Public Lands Corporation.

The PVCD, with assistance from NRCS, will develop temporary and permanent measures to control erosion and sediment that will be implemented by the construction contractor in compliance with state water quality regulations. The measures will include best management practices as well as streambank stabilization, monitoring, and maintenance features.

A “Certificate of Approval” is required from the WVDEP Division of Water and Waste Management & Environmental Enforcement – Dam Safety Section pursuant to West Virginia State Code, 47-34-4.

The Sponsors will provide leadership in developing an Emergency Action Plan (EAP) prior to construction and will update the EAP annually with local emergency response officials. NRCS will provide technical assistance in the preparation of the EAP. The purpose of the EAP is to outline appropriate actions and to designate parties responsible for those actions in the event of a potential problem with a floodwater retarding structure.

Project Cost

Project costs include all costs necessary to install the recommended plan. Tables 1 and 2 display all estimated project costs. Costs for each project purpose were identified and allocated accordingly.

Construction Cost

Construction cost accounts for all material, labor, and equipment necessary to construct the dam, auxiliary spillway, mitigation, and water supply. These costs were estimated using 2006 prices. Costs for the dam, auxiliary spillway, and water supply system were estimated during the planning phase. Mitigation costs were estimated using traditional methods such as computing quantities of work and material and multiplying that by unit costs taken from sources such as Means Cost Data or recent NRCS bid abstracts.

The planning construction costs are estimated. Detailed structural designs and construction cost estimates will be prepared prior to contracting for the work to be performed. Final construction costs will be those costs actually incurred by the contractor performing the work, including the cost of any necessary contract modifications.

Engineering Costs

Engineering services include all costs associated with the design of the project and preparation of construction drawings. Engineering services cost for the dam design is the actual price paid to the engineering firm for designing the dam. The water supply design costs were estimated as percentages of the estimated construction cost for the respective items. NRCS engineering services cost was included for staff time for design contract supervision.

Project Administration Cost

Project administration cost includes NRCS staff costs for contract administration, construction inspection, and coordination with property acquisition and utility issues. Costs for land surveys, title opinions, appraisals, review appraisals, negotiations, and relocation assistance advisory are actual contract prices that will be paid for those services. NRCS staff time was estimated based on anticipated salaries for personnel.

Real Property Rights

The Sponsors will be responsible for 25% of the real property rights costs including costs necessary to obtain the land, easements, relocations, utility modifications, and rights-of-way needed to install the project. The acreage needed for purchase and easements was estimated using Hardy County tax maps, topographic maps developed by the NRCS, and USGS 7.5 minute topographic maps. Real property rights will be secured to the top of dam elevation for the flood detention pool. Values for land and structures were estimated with the assistance of local officials. Road relocations and associated costs were estimated from historical contract costs, updated to current prices. Other utilities were estimated using information obtained from maps, visual inspections, and available historic utility modification cost data. These cost estimates will

change as more detailed data becomes available and official appraisals are conducted during the acquisition process.

Relocation Payments

Relocation payments are paid to families and businesses that have to be relocated as a result of the project installation. These payments enable relocated families to obtain new housing without undue financial hardship and assist businesses to relocate with minimal cost. Relocation costs are estimated using the guidelines set forth in the Uniform Relocation Assistance and Real Property Acquisition Act of 1970, as amended.

Operation and Maintenance (O&M)

The Sponsors will be responsible for operation and maintenance costs for the dams, including all annual costs needed to conduct yearly inspections, produce O&M reports, and perform necessary maintenance during the operational life of the project. A specific operation and maintenance plan, utilizing the NRCS National Operation and Maintenance Manual, will be prepared for Site 16 before issuing invitations to bid for construction. The term of this new O&M agreement will be for a period of 100 years, which is the life expectancy of the project.

Installation and Financing

The installation of the project is funded by the NRCS and the Sponsors. Technical assistance is provided by the NRCS. The Sponsors will be responsible for the construction costs and landrights associated with the water supply component (at multiple-purpose sites).

LIST OF PREPARERS AND QUALIFICATIONS

NAME	PRESENT TITLE/ OTHER EXPERIENCE (Years in Job)	EDUCATION Degree(s) Continuing Education Subjects	OTHER (licenses, etc.)
Andy Deichert	Civil Engineer (13)	BS & MS Agricultural Engineering	Registered Professional Engineer
Ed Kesecker	District Conservationist (31)	BS Agriculture	
Pam Yost	Economist (14)	BS Resource Management MS Agricultural Economics	
Timothy Ridley	Hydraulic Engineer (18) Consulting Engineer (8)	BS Civil Engineering	Registered Professional Engineer Professional Surveyor
Jeff McClure	Geologist (2) WV DEP Geologist (10)	BS Geology BA Biology	
Bryan Lee	Cultural Resources Specialist (5) Archaeologist (10)	BA Anthropology MA Anthropology	
Ron Wigal	Resource Conservationist (17)	BS Wildlife Management MS Wildlife Management	
Thomas Tamasco	Civil Engineer (2) Dam Safety Engineer (7)	BS Civil Engineering Technology	Registered Professional Engineer

LITERATURE CITED

Barbour, M.T., J. Gerritsen, B.D. Snyder, and J.B. Stribling. 1999. Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates and Fish, Second Edition. EPA 841-B-99-002. U.S. Environmental Protection Agency; Office of Water; Washington, D.C.

Cardwell, Dudley H., Erwin, Robert B., and Woodward, Herbert P. 1968. Geologic Map of West Virginia. West Virginia Geological and Economic Survey.

Cremann, Gretchen, Alana Hartman and Neil Gillies. 2005. The Lost River Watershed Based Plan. WVDEP website publication. Charleston, WV.

Dean, S. L., Kulander, B. R., and Lessing, P., Geology of the Bergton, Lost City, Lost River State Park, and Orkney Springs Quadrangles, Hardy County, WV, West Virginia Geological and Economic Survey, 1992.

Development of Design Data for Planning and Preliminary Design of Lost River Site 16. 2005-2006. United States Department of Agriculture, Natural Resources Conservation Service.

Estep, Ron. 1989. Soil Survey of Grant and Hardy Counties, West Virginia, United States Department of Agriculture, Soil Conservation Service.

Economic Summary, Workforce West Virginia, Research, Information, and Analysis, various issues.

Engineering News Record, March 2006 construction cost index. Website: www.enr.com

Federal Energy Regulatory Commission. 2006. Cove Point Expansion Project – Final Environmental Impact statement. Washington, D.C.

Federal Energy Regulatory Commission. 2005. Hardy Storage and Transmission Projects – Environmental Assessment. Washington, D.C.

Hardy County Public Service District. 2003. Preliminary Engineering Report for Hardy County Public Service District Baker/Mathias Water Distribution System. Thrasher Engineering, Clarksburg, WV.

Potomac Valley Soil Conservation District; Hardy County Commission; West Virginia Soil Conservation Agency; U. S. Department of Agriculture, Natural Resources Conservation Service and Forest Service. 2001. Final Supplemental Watershed Plan Agreement No. 3 and Environmental Assessment for Lost River Subwatershed or Potomac River Watershed, Hardy County, West Virginia. 12 pp.

Price, Paul H., Prouty, William F., Tilton, John L., and Tucker, R. C. 1927. Hampshire and Hardy Counties Geological Report, West Virginia Geological Survey.

U.S. Army Corps of Engineers. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1. Washington, D.C.

U.S. Census Bureau; Census 2000, Summary File 1 (SF1) and 3 (SF 3); generated by Pam Yost; using American Factfinder; <<http://factfinder.census.gov/>>; (August 2004).

U.S. Department of Agriculture. 1992. National Watershed Manual. Soil Conservation Service.

US Department of Agriculture, Natural Resources Conservation Service and West Virginia Conservation Agency. April 2004. Hardy County Water Resources Report. http://www.wv.nrcs.usda.gov/programs/watershed/lost/lost_river.html.

United States Department of Agriculture. 2004. U.S. Census of Agriculture, Census 2002, Summary and State Data, Volume 1, Geographic Area Series, Part 51, National Agricultural Statistics Service.

US Department of Agriculture. 1990. Urban Floodwater Damage Economic Evaluation URB1, Soil Conservation Service.

US Department of Agriculture. 2005. Part 630 Hydrology National Engineering Handbook, Chapter 31, Computer Program for Water Surface Profiles. Natural Resources Conservation Service.

US Department of Agriculture. 1992. Technical Release No. 29 (TR-29) Project Formulation Hydrology. Natural Resources Conservation Service.

U.S. Department of Agriculture, Rural Utilities Service. 2004. Supplemental Environmental Report for the Hardy County Public Service District – Baker/Mathias Water Distribution System Raw Water Treatment Plant. Thrasher Engineering, Clarksburg, WV.

U. S. Department of Agriculture, Soil Conservation Service. 1974. Lost River Subwatershed of the Potomac River Watershed, Hardy County, West Virginia – Environmental Impact Statement. 91 pp.

U. S. Department of Agriculture, Soil Conservation Service. 1994. Environmental Information Report – Dam Site 27 – Upper Cove Run, Lost River Watershed, Hardy County, West Virginia. 13 pp.

U. S. Department of Agriculture, Soil Conservation Service. 1990. Supplemental Information Report - Lost River Watershed Project, Hardy County, West Virginia. 18 pp.

U. S. Department of Agriculture, Soil Conservation Service. 1989. Addendum to Lost River Subwatershed of Potomac River Watershed Environmental Impact Statement – Environmental Assessment Report for Dam Site No. 4, Kimsey Run, Hardy County, West Virginia. 18 pp.

U.S. Department of Interior, Fish and Wildlife Service. 1980. Habitat Evaluation Procedures (HEP). Ecological Services Manual (ESM) 102. U.S. Fish and Wildlife Service, Division of Ecological Services. Government Printing Office, Washington, D.C. 84pp.+ appendices.

US Department of Interior, Fish and Wildlife Service and US Department of Commerce. 2002. 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation – West Virginia.

U.S. Environmental Protection Agency. 1998. Fecal Coliform TMDL Development for Lost River, Hardy County, West Virginia. EPA Region 3, Philadelphia, PA.

US Geological Survey. <http://nwis.waterdata.usgs.gov/nwis/gwdata>.

US Water Resources Council. 1983. Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies,

WV Department of Transportation, Division of Highways and the Federal Highway Administration. 1996. Appalachian Corridor H, Elkins, West Virginia to Interstate 81, Virginia. Final Environmental Impact Statement, Charleston, WV.